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IS COLLABORATIVE RE-USE A SOLUTION TO HELP REDUCE WASTE PRODUCTION WHILE MAINTAINING ECONOMIC GROWTH?

The organisational level study in the UK

By

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ABSTRACT

The current dominant waste management techniques (recycling, recovery and disposal), which are 'science first' solutions, are failing to achieve a middle ground between conventional economic growth and decreasing wastefulness. This thesis, therefore, focuses on exploring re-use, a 'human action' solution. The overall aim is to investigate perceptions of re-use among UK corporations and their re-use supply chains, and the factors facilitating and preventing the re-use of materials becoming normal practice. The study focuses on those organisations that are regarded as leaders in the field of waste management.

To carry out this investigation, the research uses a sequential mixed-methods approach, wherein the findings provided by the content analysis are utilised to develop the semi-structured interview questions. In doing so, a pro-environmental framework, CEBA (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap), is used as an analytical tool.

The research findings show that there are ways in which organisations can collaborate to deliver re-use activities that can play a role in achieving a middle ground between conventional economic growth and decreasing wastefulness where third sector organisations (TSOs) are identified as key facilitators. These findings are presented in the form of collaborative re-use models. Conversely, findings also indicate that there are two key reasons behind corporations' lack of engagement in re-use behaviour. Firstly, there are ambiguities and variations in the understanding of re-use. Secondly, corporations' primary motivation is to increase profitability, which supersedes any social benefits that are attained through re-use practices.

The research concludes that, depending on the type of organisation and the type of materials, engagement in and perceptions of re-use varies. This further indicates that re-use is a complex phenomenon which is in its nascent stages of development, and still far from becoming a norm. The research recommends exploring re-use longevity for future studies.

DEDICATION

This work is dedicated to…

To my dearest Husband, Gunjan Sarda & in-laws

To my Father, Bhagwat Tavri

Mother, Meena Tavri

Sister, Kanupriya Tavri

& lovely Brother, Bhartendu Tavri

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DECLARATION

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of the requirements of the degree except as fully acknowledged within the text.

I also certify that I have entirely written the thesis. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. Also, I certify that all information sources and literature used are indicated in the thesis.

Purva Tavri

March 2020

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ABBREVIATIONS

CEBA:	Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap
CLSC:	Closed-Loop Supply Chains
Co2:	Carbon dioxide
CSR:	Corporate Social Responsibility
DBIS:	Department for Business Innovation & Skills
DCLG:	Department for Communities and Local Government
DECC:	Department of Energy and Climate Change
DEFRA:	Department of Environment, Food, and Rural Affairs
DELWP:	Department of Environment, Land, Water and Planning
EC:	European Commission
ECDGE:	European Commission DG Environment
EGSS:	Environmental Goods and Services Sector
EIA:	Environmental Impact Assessment
EIRIS:	Ethical Investment Research Services
ELVs:	End-of-Life Vehicles
EMF:	Ellen MacArthur Foundation
EPA:	Environmental Protection Agency
EPR:	Extended Producer Responsibility
ERN:	European Remanufacturing Network
FoE:	Friends of Earth
GDP:	Gross Domestic Product
GFN:	Global Footprint Network
GRI:	Global Reporting Initiative
GVA:	Gross Value Added
GWh:	Gigga Watt hours
HDI:	Human Development Index
HWRCs:	Household Waste Recycling Centres
ICE:	Inventory of Carbon and Energy
IMechE:	Institute of Mechanical Engineers
IPCC:	Intergovernmental Panel on Climate Change
LCRN:	London Community Resource Network
Mt:	Million Tonnes

MtCO2e:	Million Tonnes Carbon Dioxide emissions
NeF:	New economics Foundation
NGOs:	Non-Government Organisations
NSCA:	National Society for Clean Air and Environmental Protection
NSSD:	National Strategy for Sustainable Development
OECD:	Organisation for Economic Co-operation and Development
ONS:	Office National Statistics
OPSI:	Office of Public Sector Information
PSS:	Product Service System
TPB:	Theory of Planned Behaviour
TSOs:	Third Sector Organisations
UNCSD:	United Nations Conference on Sustainable Development
UNDP:	United Nations Development Programme
UNEP:	United Nations Environment Programme
WCED:	World Commission on Environment and Development
WEEE:	Waste Electrical and Electronic Equipment
WRAP:	Waste and Resource Action Programme

GLOSSARY

Associative Strength

the willingness to change the current behaviour by translating it into cooperative type behaviour and maintain it (Collier and Esteban, 2007).

Boomerang Effect

Boomerang effect in this research refers to the unintended consequences of an attempt to persuade resulting in the adoption of an opposing position instead (Schultz *et al.*, 2007).

CEBA (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap)

the theoretical framework developed in this thesis for investigating the pro-environmental behaviour change mechanisms and barriers.

- High means control

one of the variables of CEBA that enables communicating influence through mandatory rules and regulations.

- High attractiveness

one of the variables of CEBA that enables communicating influence through feedback and peer pressure.

- High credibility

one of the variables of CEBA that enables communicating influence through knowledge and facts.

- Economic variables

variable of CEBA considering the availability of resources as an important element in converting communication into Engagement/action.

- Non-economic variables

Variable of CEBA considering situational norm, social context, and salient environment as important elements in converting communication into Engagement/action.

- Behavioural maintenance

one of the categories CEBA that enables maintenance of behaviour through measuring and monitoring.

- Avoidance of the Value action gap

avoiding the gap between willingness to act and actual behaviour.

Consumption or Resource Consumption

the action of using up resources.

Decoupling

the process of separating economic growth from associated negative environmental impacts. In other words, it is to do things more efficiently (UNEP, 2011).

Absolute decoupling

raising resource productivity to alleviate the problem of scarcity. The impact on the environment is less than the economic growth rate, which means the use of resources more wisely and cleanly. For instance, by re-use.

- Relative decoupling

the decline in resource uses irrespective of economic growth. For instance, by recycling, recovery and other technological means.

Duty of Care

anyone who produces, imports, keeps, stores, transports, treats or disposes of waste must take all reasonable steps to ensure that waste is managed properly. This duty of care is imposed under section 34 of the Environmental Protection

Act 1990. It also applies to anyone who acts as a broker and has control of waste. A breach of the duty of care could lead to an unlimited fine if convicted in the Magistrates Court or the Crown Court.

Environment Agency

an executive non-departmental public body responsible to the Secretary of State for Environment, Food and Rural Affairs and an assembly sponsored public body responsible to the National Assembly for Wales. It was established under the Environment Act (1995) to take over the functions of HMIP (Her Majesty's Inspectorate of Pollution) the NRA (National Rivers Authority) and the WRAs (Waste Regulation Authorities), providing a comprehensive approach to the protection and management of the environment by combining the regulation of land, air and water (Read, 2000).

European Commission (EC)

is the EU's executive body. It represents the interests of the European Union as a whole (not the interests of individual countries) (Hakami, 2009).

EU Waste Directives

provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU (Hakami, 2009).

Human Action (see: Science First Model)

the ways societies are organised and reorganised to change the likely consequences of climate change. For example, re-use (Urry, 2010).

Organisations

for the thesis, organisations include; corporations and Third Sector Organisations (TSOs).

- Corporations

for the thesis, sectors include; retail, construction, manufacturing and waste services.

- Third Sector Organisations (TSOs)

diverse, active, and passionate sector. Organisations in the sector share common characteristics: non-government, value-driven and principally reinvest any financial surplus to further social, environmental, or cultural objectives. The term encompasses voluntary and community organisations, charities, social enterprises, cooperatives and mutual, both large and small (DEFRA, 2013a).

Science First Model (see: Human Action)

ways technologies are used in changing the likely consequences of climate change. For example; recycling, recovery, remanufacturing, CLSC, reverse logistics and other technological advancements (Urry, 2010).

Waste

any substance or object which the holder discards or intends or is required to discard (DEFRA, 2013b).

- Zero waste

is a philosophy that encourages the redesign of resource life cycles so that all products are re-used. No trash is sent to landfills and incinerators. The recommended process is one similar to the way that resources are re-used in nature (DEFRA, 2013b).

Waste Hierarchy

the preferred order of waste management options currently available based on their environmental impacts, and the guiding principle for UK waste management practices (DEFRA, 2013b).

- Landfill

waste disposed of at a void, often a former quarry, sand, or clay pit, filled to the original ground level, with waste material being used to landscape or reclaim areas of the ground; the traditional process of disposing of rubbish.

- Other recovery

a general term used to describe the extraction and utilisation of economically useable materials or energy from the waste stream.

- Preparing for re-use

checking, cleaning, or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

    - Re-use

buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed)

    - Remanufacturing

returning a used product to at least its original performance with a warranty that is equivalent to or better than that of the newly manufactured product.

    - Repair

replacement of a part in a used item.

- Prevention

measures taken before a substance, material, or product has become waste that reduces:

(a) the quantity of waste, including through the re-use of products or the extension of the lifespan of products

(b) the adverse impacts of the generated waste on the environment and human health, or

(c) the content of harmful substances in materials and products.

- Recycling

separating a given material from the waste stream and processing it so that it may be used again as a useful material for products which more commonly may not be similar to the original. The reprocessing of waste into secondary raw materials.

1. CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

This study investigates perceptions of re-use among UK corporations and their re-use supply chains, and the factors facilitating and preventing the re-use of materials becoming normal practice. The focus is on those organisations that are identified as being in the vanguard of moving up the waste hierarchy by the Waste and Resource Action Programme (WRAP) 2012 and 2013 business case studies.

WRAP is an independent not-for-profit or company limited by guarantee, which is based in the UK. It was formed in 2000 by an amalgamation of various government delivery bodies within the UK, with the lead department being the Department of Environment, Food, and Rural Affairs (DEFRA).[1]

The waste and resource industry recognises WRAP as a government-funded body responsible for introducing waste prevention activities (including re-use) through research, case studies, and pilot projects. It also offers advice and technical reporting tools to public and private sector organisations, charities and other stakeholders to assist them in developing their strategies regarding waste and resource management (DEFRA, 2013c; WRAP, 2018a).

Table 9.1 (See Appendix I, Section 9.1.1) provides a summary of WRAP's development and its work with local authorities, businesses, and communities in delivering practical solutions to improve resource efficiency.

1.2 RESEARCH BACKGROUND: THE UK CONTEXT

This thesis starts from the contention that, despite the growing scientific consensus on the significance of contemporary environmental threats and resource depletion, societies are doing very little to make the changes, or, at best, attempting to tackle marginal aspects of these issues. The current environmental crisis is being driven by the combined effects of climate change, ecosystem decline and resource scarcity.

[1] 'DEFRA is a ministerial department of the UK government. It operates in England and is responsible for regulating and enforcing all environmental issues. It is responsible for the environment, food and farming, and for rural matters. This means that it also regulates waste management in England as part of its role of protecting the natural environment and encouraging sustainable use of natural resources' (Hakami, 2009).

The modern economy is built on the continuous expansion of material consumption, which Jackson (2009) argues is regarded as an index of social progress. This was observed in 1970 by Baudrillard in his sociological study of the 'society of consumption' (the English edition was published 20 years ago in 1998). In his discussion of mass media culture, Baudrillard referred to consumption as a parasite taking hold of all of human life. He argues that the 'society of consumption' is turning the relentless purchase and discarding of goods into a habit, and leading people to believe that in doing so, they are affluent, fulfilled, happy, and liberated. He writes:

> The consumer society needs its objects in order to be. More precisely, it needs to *destroy* them. The use of objects leads only to their *dwindling disappearance*. The value created is much more intense in *violent loss*. This is why destruction remains the fundamental alternative to production: consumption is merely an intermediate term between the two. (Baudrillard, 1998, p.47)

Baudrillard further emphasised that this cycle of consumption and destruction is especially predominant among the affluent inhabitants of developed countries. However, consumerism is by no means confined to the developed nations; it is becoming ever more globalised.

Wijkman and Rockstrom (2011) illustrate this tendency by observing that in 2005, it was estimated that the one billion people living in developed countries consumed 32 times more resources than the 5.5 billion people in developing nations. Since then, however, in developing nations such as India and China, resource-usage or consumption among the broad middle class is rapidly approaching the level seen in developed nations. This is evident in the recent Human Development Index (HDI) presented by the United Nations Development Programme (UNDP), which shows sharp increases in per capita carbon dioxide emissions in India and China from 1990 to 2014, of almost 143 per cent and 241 per cent respectively (World Bank, 2018).

In his brief sketch of ecological limits, Tim Jackson (2009) examines the negative environmental consequences of unbridled global economic development. He points out that if the world economy

> continues to grow at the same rate, it will be 80 times bigger in 2100 than it was in 1950. This extraordinary ramping up of global economic activity has no historical precedent. It's totally at odds with our scientific knowledge of the finite resource base and the fragile ecology on which we depend for survival. (Jackson, 2009, p.13)

Increasing consumption is therefore a fundamental cause of the unsustainability of the modern economy. In particular, modern society's notion of prosperity, in which higher consumption is associated with improved well-being, is itself fundamentally wrong-headed (Baudrillard, 1998; Jackson, 2005, 2009; Urry, 2010; Wijkman and Rockstrom, 2011).

This thesis indicates that this flawed association is a crucial cause of the problematic contemporary increase in consumption, a view supported by the review of the literature on technological waste management provided in Chapter 2. These studies indicate that socio-economic development is increasing levels of affluence, and thus changing patterns of taste and consumption. Among the effects of this are increases in the demand for cheaper and more convenient products, the advent of built-in obsolescence, and the proliferation of packaging, which are among the key factors leading to a throw-away mentality and wasteful practices. This mentality appears to impose an irreconcilable mutual incompatibility between increasing economic growth and decreasing environmental degradation. Therefore, this thesis illustrates the necessity of achieving a middle ground or compromise between conventional economic growth and reduced wastefulness to protect the environment.

In 1987, the Brundtland Commission of the United Nations defined 'sustainable development' as:

> development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts. [They are]: the concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs. (WCED, 1987, p.43)

This thesis argues that in the modern economy, sustainable development entails a system whereby, in developed nations such as the UK, human behaviour is shifted from throw-away habits to more resource-efficient modes.

Pearce and Barbier observe that

> the main failure of the economic system is the lack of value given to irreplaceable natural resources. It is part of human nature to search for a new paradigm. But there is a risk that as fast as we discover solutions we reject them because they are no longer new. Huge energies are devoted to rethinking the problem rather

than solving it. The real challenge is perhaps the one most people find the least exciting. We know what to do. We need to get into it and do it. (2000, p.250)

The phenomenon identified by Pearce and Barbier (2000) is evident in the waste and resource management sector. For instance, Blass and Geyer (2010) carried out a macro-level study examining the economics of cell phone re-use and recycling in the UK and USA. They identified that continuous production and innovation, and massive discounts lead to frequent replacement of items ('inbuilt obsolescence') and increases consumption, which is generally not challenged.

Further, the increase wastefulness is evident in the UK waste figures,[2] which show a rise of 4.85 per cent in waste production at the organisational level in a period of just 2 years – between 2010 and 2012 (DEFRA, 2015a; DEFRA, 2016).

A further cause for concern are the landfill statistics (Figure 1.1), which on the one hand show a decrease in the use of landfill sites, but on the other also show a stark decline in landfill capacity (of around 28 million tonnes). Problems with landfill are not limited to falling capacity; landfill also has a significant global climatic impact. For instance, the 2009 Environment Agency report on the control of landfill gas indicates that in the UK, modern landfill sites are enabling the reduction of local pollution and the impact of global warming by generating electricity from methane.[3] However, the report emphasises that this beneficial effect regarding pollution and global warming is limited, because 'low calorific landfill gas' cannot be used for generating electricity and is vented untreated into the atmosphere. A further concern is that the exact amount of methane released from this source is currently unknown.

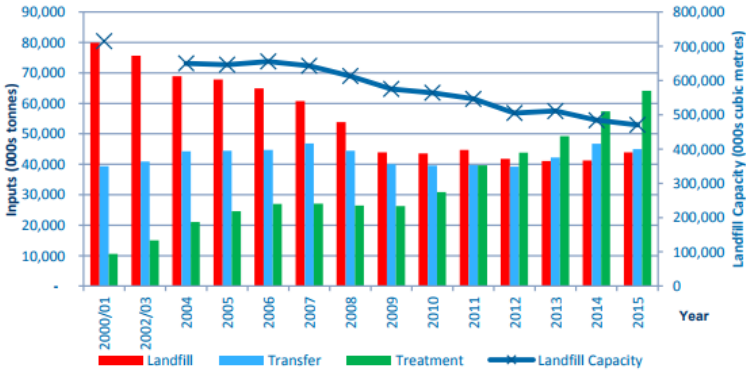


Figure 1.1: Trends for 2000–15 (Environment Agency, 2015)

[2] This thesis has only considered the data published before the EU referendum in June 2016.
[3] While carbon dioxide is typically referred to as a potent greenhouse gas (GHG), methane is a GHG that is 23 times as damaging as carbon dioxide (DEFRA, 2007).

These negative trends are despite the success achieved in moving from landfill to the current dominant technological waste management treatments (recycling and recovery) (see Figure 1.1). For instance, in 2012, the Gross Value Added (GVA)[4] from recycling materials such as metal, packaging, glass, paper and board, plastic, textiles and footwear was estimated at between £0.3 billion and £0.5 billion. Similarly, savings from recovery were utilised to generate 9,005-gigawatt-hours (GWh) of electricity, potentially saving £447.4 million in electricity production from recycling and recovery (DEFRA, 2015a). Furthermore, the Office for National Statistics (ONS) indicates that the waste sector generated an estimated £6.8 billion in GVA and supported 103,000 jobs in 2013 (ONS, 2015).

The above-mentioned pieces of evidence indicate that increased economic activity from recycling and recovery (technological waste management techniques) are leading to increased waste output. This demonstrates the limitations of technological waste management in balancing economic growth with waste reduction.

Ekin *et al.* (2003), Pearce and Barbier (2000), and Pelenc, Ballet and Dedeurwaerdere (2015) argue that technological solutions to environmental problems treat human and natural capital[5] as synonymous, and can thus be considered under weak sustainability. In contrast, human-based environmental solutions involve recognition of differences in the use of human and natural capital, and these authors therefore argue that they are a form of strong sustainability. The analysis of the difference between weak and strong sustainability is as follows:

Weak sustainability

Pearce and Barbier argue that:

> there is essentially no inherent difference between natural and other form of capital and hence the same optimal depletion rules apply to both. As long as the natural capital that is being depleted is replaced with even more valuable physical and human capital, then the value of aggregate stock - comprising both human, physical and the remaining

[4] Gross Value Added is used to quantify a sector's contribution to wider economic growth (measured through Gross Domestic Product). DEFRA defines GVA as 'a measurement that is done by taking away input costs from the value of the sector's output. The GVA of a sector can be increased by reducing input costs or finding new, higher value markets for the output of the sector' (2015a, p.2).

[5] The OECD defines human capital as 'the knowledge, skills, competences and other attributes embodied in individuals that are relevant to economic activity' (1997, p.40). On the other hand, natural capitalism as a form of capitalism in which 'economic progress can…take place in democratic, market-based systems of production and distribution in which all forms of capital are fully valued, including human, manufactured, financial, and natural capital' (Hawken *et al.*, 1999, p.9).

> natural capital - is increasing over time. Maintaining and enhancing the total stock of all capitals alone is sufficient to sustain sustainable development. (2000, p.24)

Along similar lines, Pelenc, Ballet and Dedeurwaerdere argue that:

> natural capital and manufactured capital are essentially substitutable and considers that there are no essential differences between the kinds of well-being they generate. The only thing that matters is the total value of the aggregate stock of capital, which should be at least maintained or ideally increased for the sake of future generations. Such a position leads to maximising monetary compensations for environmental degradations. In addition, from a weak sustainability perspective, technological progress is assumed to continually generate technical solutions to the environmental problems caused by the increased production of goods and services. (2015, p.1)

This is further corroborated by Ekin *et al.* in their study on the concepts of critical natural capital and strong sustainability, where they argue that 'welfare is not normally dependent on a specific form of capital and can be maintained by substituting manufactured for natural capital, though with exceptions' (2003, p.168).

Strong sustainability

Pearce and Barbier argue that:

> physical and human capital cannot substitute for all the environmental resources comprising the natural capital stock, or all of the ecological services performed by nature. Maintaining or increasing the value of the total capital stock over time in turn requires keeping the non-substitutable and essential components of natural capital content over time. (2000, p.24)

Similarly, Pelenc, Ballet and Dedeurwaerdere suggest that:

> natural capital cannot be viewed as a mere stock of resources. Rather natural capital is a set of complex systems consisting of evolving biotic and abiotic elements that interact in ways that determine the ecosystem's capacity to provide human society directly and/or indirectly with a wide array of functions and services. (2015, p.1)

Along similar lines, Ekin *et al.* illustrate the importance of natural capital by indicating that:

> substitutability of manufactured for natural capital is seriously limited by such environmental characteristics as irreversibility, uncertainty and the existence of 'critical' components of natural capital, which make a unique contribution to welfare.

> An even greater importance is placed on natural capital by those who regard it in many instances as a complement to man-made capital. (2003, p.168)

Chapter 2, which reviews some of the key studies in the field of waste management and sustainability, and establishes the premise that technological environmental solutions offer weak sustainability, contributing only to the achievement of relative decoupling.[6] On the other hand, human-based environmental solutions are highly sustainable options, which are identified as having the potential to play a role in the move towards an absolute decoupling.[7]

Within the waste and resource management sector, recycling, recovery, remanufacturing, reverse logistics, product service systems (PSS), and closed-loop supply chains (CLSC) are among the key examples of technological environmental solutions that are considered as contributing to relative decoupling. Therefore, this study emphasises that, in the current challenging climatic environment, relying on technological solutions alone is not enough. Instead, identifying human-based environmental solutions that can play a part in moving towards absolute decoupling is one of the essential requirements for the modern economy. With a special focus on tracing the journey of 'human-based environmental solution' within the waste hierarchy, this study now describes UK waste development.

1.2.1 The UK Waste Journey

In waste management techniques, re-use is a purely 'human-based environmental solution' that was part of human life long before the introduction of the waste hierarchy (Figure 1.2). Re-use is not a new practice, and indeed, repair and re-use were common in the early eighteenth century, when waste collection and segregation first started in the UK (Hawkins and Shaw, 2004). Re-use was often undertaken by women at home in their role as *bricoleurs*[8] (Stresser, 1999). Even today, in developing countries, household waste is re-used through both economic and non-economic cycles (Condon *et al.*, 2006).

[6] Technological processes that tend towards early carbon reduction are considered to achieve relative decoupling (Jackson, 2009).
[7] Absolute decoupling is defined as 'no waste growth' (Sgostrom and Ostblom, 2010, p. 1550). Chatterton and Style (2001) present absolute decoupling as a way of finding a middle ground between conventional economic growth and waste reduction.
[8] An odd-job man who works with his hands, employing the *bricoles*, the scrap or odds and ends. Unlike the engineer, the *bricoleur* does not carry out his task using 'raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with "whatever is at hand"' (Strasser, 1999, p.11).

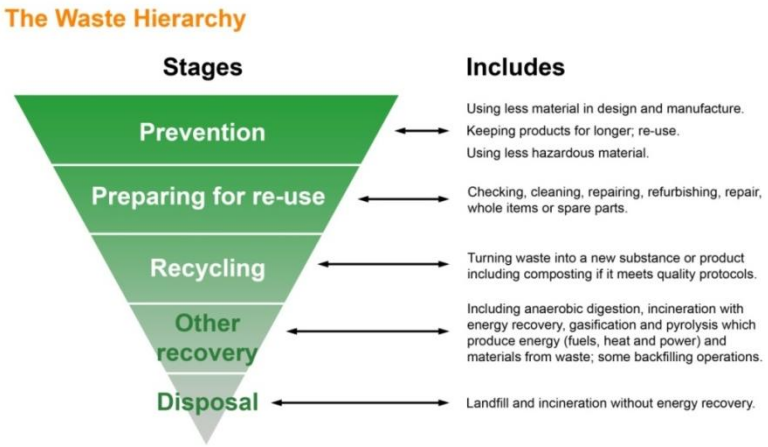


Figure 1.2: The Waste hierarchy 2013 (DEFRA, 2013b)

Starting in the 1720s, the Industrial Revolution was a watershed moment that is considered to be one of the earliest drivers that instigated a transformation of waste disposal practice from the informal re-use and repair of materials, to a formalised systematic means of disposing of waste (Castagna *et al.*, 2013; Hawkins and Shaw, 2004). It also transformed a relatively simple agrarian society to a system that functioned on the basis of capitalism (Strasser, 1999).

Capitalism, which is also referred to as the conventional capitalist economy, is defined by Hawken, Lovins and Lovins (1999, p.6) as the economic orthodoxy that holds that 'economic progress can best occur in free-market systems of production and distribution where reinvested profits make labour and capital increasingly productive'. Capitalism boosted the free-market system of production and distribution, creating competition and varied consumer choices through mass production and flexible production (Preston, 2012; Strasser, 1999). For instance, the Ford Motor Company and General Motors introduced mass production; this was followed by Toyota and other Japanese firms, leading to the introduction of flexible production (Preston, 2012).

This continuous rise in production and consumption instigated changes such as positive socio-economic developments; however, it also led to severe health and environmental issues. One of the reasons for this was the introduction of artificial materials in the production process, such as plastics (Strasser, 1999). In Britain, the damaging effects of harmful gases on air quality were first recognised by the government in 1863, with the introduction of the Alkali Act (Hawkins and Shaw, 2004). This was the first step in the development of waste management services in the UK.

In their study of waste management law, Hawkins and Shaw (2004, p.4) note that 'the 1863 act also introduced the origins of the Environment Agency and its present

relationship with the waste management industry'. However, despite this effort, improvements in air quality were not evident. The Public Health Act 1936 gave powers to health authorities to prosecute and serve abatement notices as punishments for polluting the environment. Nonetheless, it was only in the late 1960s and 1970s that a series of toxic chemical waste dumping incidents highlighted waste as a potential primary source of environmental pollution and demonstrated the need for stringent legislative control of waste (Williams, 2005). Williams writes:

> amongst the most notorious incidents were the discovery, in 1972, of drums of toxic cyanide waste dumped indiscriminately on a site used as a children's playground near Nuneaton in the UK, the leaking of leachate and toxic vapours into a housing development at the Love canal site New York state in 1977, the dumping of 3,000 tonnes of arsenic and cyanide waste into a lake in Germany in 1971, and the leak of polychlorinated biphenyls (PCBs) into rice oil in Japan in 1968. (2005, p.3)

In the UK, emergency legislation was introduced in the form of the Deposit of Poisonous Waste Act 1972 as a direct result of the Nuneaton cyanide dumping incident. In 1974, the Control of Pollution Act resulted in further control of waste disposal on land through a new licensing and monitoring system (Williams, 2005). The licensing system includes measures such as the requirement to obtain a disposal licence in respect of any land in the area of a disposal authority, and criteria for the process of transferring and relinquishing of licences. The monitoring system includes supervision of licensed activities and procedures to appeal to the Secretary of State regarding decisions concerning licences (Control of Pollution Act 1974).

In response to concerns regarding environmental and health issues, in 1975 the European Commission (EC) introduced waste directive to govern and control the management of waste (Hawkins and Shaw, 2004; Resource Futures, 2009; Williams, 2005). The introduction of waste directive enhanced the recognition of recycling and recovery as better alternative technological waste management mechanisms to landfill. Further development of waste management legislation came with the Environment Protection Act 1990, when several legislative regimes were introduced, such as Duty of Care,[9] Pollution Prevention (air, water, and land), and Litter control (Hawkins and Shaw, 2004).

[9] The Code of Practice applies to organisations if they produce, carry, keep, dispose of, treat, import or have control of waste in England or Wales. The law requires anyone dealing with waste to keep it safe, make sure it is dealt with responsibly, and only given to businesses authorised to take it.

At the time of research, the UK was a European Union (EU) member state that adhered to the waste directive of the EC.[10] The EC prescribes the outcome of waste regulation policy for the member states, but leaves the choice of the forms and methods for achieving the required results under the control of the national governments (Johnson, 2007; Williams, 2005).

The EU waste control legislation included a waste plan to encourage recycling. The waste controls also led to the establishment of waste directive covering the management of both hazardous and non-hazardous waste arising from commercial operations. The waste control measures covered the following areas:

> toxic and dangerous waste; protection of groundwater; control of air pollution; control of trans frontier shipments; environmental assessment for incinerators and landfill sites; control of sewage sludge to land; polluter pays principle; control of hazardous waste; restriction of sewage sludge disposal to sea; control of shipments of all wastes; recycling and recovery of packaging and packaging waste; operational standards and emission limits for new and existing hazardous waste incinerators; integrated pollution prevention and control (IPPC); targets to reduce biodegradable waste going to landfill, banning co-disposal; incineration and co-incineration of all wastes; recycling of end-of-life vehicles. (Williams, 2005, pp.15–16)

The UK government launched the waste strategies aiming to achieve zero waste to landfill and protect the environment by moving up the waste hierarchy, this was a requirement of the EU waste directive. Alongside these, in 1996 a Landfill Tax was introduced in the UK. The Landfill Tax, which remains in force, provides fiscal incentives to reduce the amount of waste produced and sent to landfill. It is an escalating tax that is collected by landfill site operators from waste carriers during the disposal of waste (House of Commons, 2009).

This thesis indicates that the various UK legislative and policy measures for controlling waste can be considered reactive. The 1863 Alkali Act and the 1936 Public Health Act were reactions to air pollution and consequent health issues. Similarly, the 1972 Deposit of Poisonous Waste Act and the 1974 Control of Pollution Act, which saw the introduction of waste directive, and the legislative regimes under the Environment

[10] The thesis has only considered the situation prior to the 2016 EU referendum.

Protection Act 1990 and the 1996 Landfill Tax, can be regarded as reactions to the series of toxic chemical waste dumping incidents described above.

The 2012–2013 waste figures show that legislation and government policy have contributed to increasing the use of recycling and recovery services. In 2012, 84 per cent of vehicles were recycled and 88 per cent were recovered, and in 2013, 72.7 per cent of packaging waste was either recycled or recovered (DEFRA, 2013b; Eurostat, 2016a). However, the predominance of these technological mechanisms (recycling and recovery) for controlling waste can be seen as undermining re-use practice. This is even though re-use, the only 'human action' among the waste techniques, is one of the top priorities in the waste hierarchy (Figure 1.2).

1.2.2 Research Focus

This thesis contends that within the waste and resource management sector, technological solutions to environmental problems involve myopic and short-term thinking. This is elaborated in Chapter 2, which describes the importance of human-based environmental solutions and demonstrates that issues connected to the increasing use of resources, rising consumption and growing levels of waste production mean that the industry's predominant focus on technological environmental solutions is insufficient.

This imbalance is evidenced by the fact that only one UK law facilitates re-use (the human-based environmental solution), the Single Use Carrier Bags Charges (England) Order 2015[11]. Another factor contributing to the lack of re-use initiatives may be the evident legislative disparity among the devolved governments of Wales, Scotland, and Northern Ireland. That is, the establishment of the single-use plastic bags law in England could arguably have come into force because it has been in effect in Wales since October 2011. The slower progress of England and, thus, of the UK as a whole is further reinforced by Cole *et al.* (2014) in their study of the zero waste strategy, in which they note that the devolved governments of Wales, Scotland, and Northern Ireland have set higher targets for recycling than those for England, or the UK as a whole.

Furthermore, this facilitation of re-use behaviour only began after the year 2008–9, which saw the recession and a steep decline in economic growth in the UK (Hopkins and Elliott, 2009; Parliamentary business, 2010; Wearden, 2009). As part of the synthesis (Chapter

[11] This law did not form part of the empirical work for this thesis, which was carried out before the charge came into force in England in 2015.

7), this research demonstrates the correlation of the instigation of legislation promoting re-use with the recession. In addition, this occurred only after the year 2008–9, when a shift in corporate policies emerged with the advocacy of the circular economy by the Ellen MacArthur Foundation (EMF)[12]. Chapter 2 sheds more light on the concept of the circular economy.

Corporations play an important part to accelerate change for the strengthening of regulation, as their drivers are often compliance and always the preservation of profit. As Friedman (1970, p.1) puts it,

> business responsibility is to conduct the business in accordance with their desires, which generally will be to make as much money as possible while conforming to their basic rules of the society, both those embodied in law and those embodied in ethical custom.

Urry (2010) further argues that corporations have the power to lobby the government for profit-driven motives, and they also have an impact on the supply chain and, more subtly, on behaviour among households.

Acknowledging the power of corporations and considering that re-use – the underexplored 'human action' environmental solution – can be seen not as a cost but an economic opportunity, this thesis identifies the following aim, objectives, and research questions.

1.3 AIM, OBJECTIVES AND RESEARCH QUESTIONS

Aim: this study investigates perceptions of re-use in UK corporations and their re-use supply chains, and the factors facilitating and preventing the re-use of materials from becoming normal practice. The focus is on those organisations that are identified as being in the vanguard of moving up the waste hierarchy by the Waste and Resource Action Programme (WRAP) 2012 and 2013 business case studies.

Before discussing the study's objectives and the research questions, the complexity and heterogeneous nature of the research aim is considered. Reduced consumption through re-use may be at odds with corporations' ambitions to create long-term profit, as reducing consumption can result in reduced turnover and therefore reduced profit. Thus, an

[12] 'The Ellen MacArthur Foundation is a UK registered charity which aims to inspire a generation to rethink, redesign & build a positive future through the framework of a circular economy' (www.ellenmacarthurfoundation.org).

essential task is to identify potential bases of such disincentives and value dilemmas. Any strategies to instigate lasting and effective change must take this complexity into account.

Objectives:

1. Review and analyse a body of key literature that provides examples of technological and human-based waste management techniques that are facilitating progress towards decoupling.

2. Review and analyse literature on the re-use of materials, demonstrating its effect as a human-based environmental solution in the modern economy.

3. Review and analyse a selected body of pro-environmental behaviour literature, to identify categories and variables of behaviour change and its maintenance for use in the research investigation.

4. Develop research approach and methods for empirical research of perceptions of re-use among UK corporations and their re-use supply chains, with particular focus on those organisations that the WRAP identifies as being in the vanguard of moving up the waste hierarchy.

5. Empirically examine and analyse factors that facilitate and prevent re-use of materials from becoming normal corporate practice.

6. Evaluate and synthesise the findings to assess the longevity of re-use behaviour at the leading organisational level and provide conclusion and recommendations for further studies.

The research questions for this thesis are:

Research question 1: How do corporations identified by the WRAP 2012–13 case studies as being in the vanguard of moving up the waste hierarchy perceive re-use?

Research question 2: How do re-use activities enable vanguard corporations and their re-use supply chains to reconcile the objectives of supporting waste reduction through re-use with maintaining and growing their economic returns?

Research question 3: What factors facilitate and prevent re-use of materials from becoming normal corporate practice among the vanguard organisations?

The research process undertaken to achieve the aforementioned aim and objectives, and to answer the research questions, is outlined in the research road map in the following section.

1.4 RESEARCH OUTLINE

This thesis is organised into eight chapters. The current chapter provides the introduction to the research and presents the study's aim, objectives, and research questions.

To receive validation and recognition, this thesis's analysis, findings and conclusion were shared with the waste and resource sector (Tavri, 2017, 2018a, 2018c, 2019b) and with educational fellows and researchers through academic conferences and publications (Purohit *et al.*, 2015; Tavri *et al.*, 2013, 2014a, 2014b, 2015a, 2015b; Tavri, 2018b, 2019a). This allowed for rigorous assessment and critique of methods, approaches, arguments, conclusions and recommendations to be incorporated into the study as it developed.

This section provides an overview of the structure of the thesis (Figure 1.3).

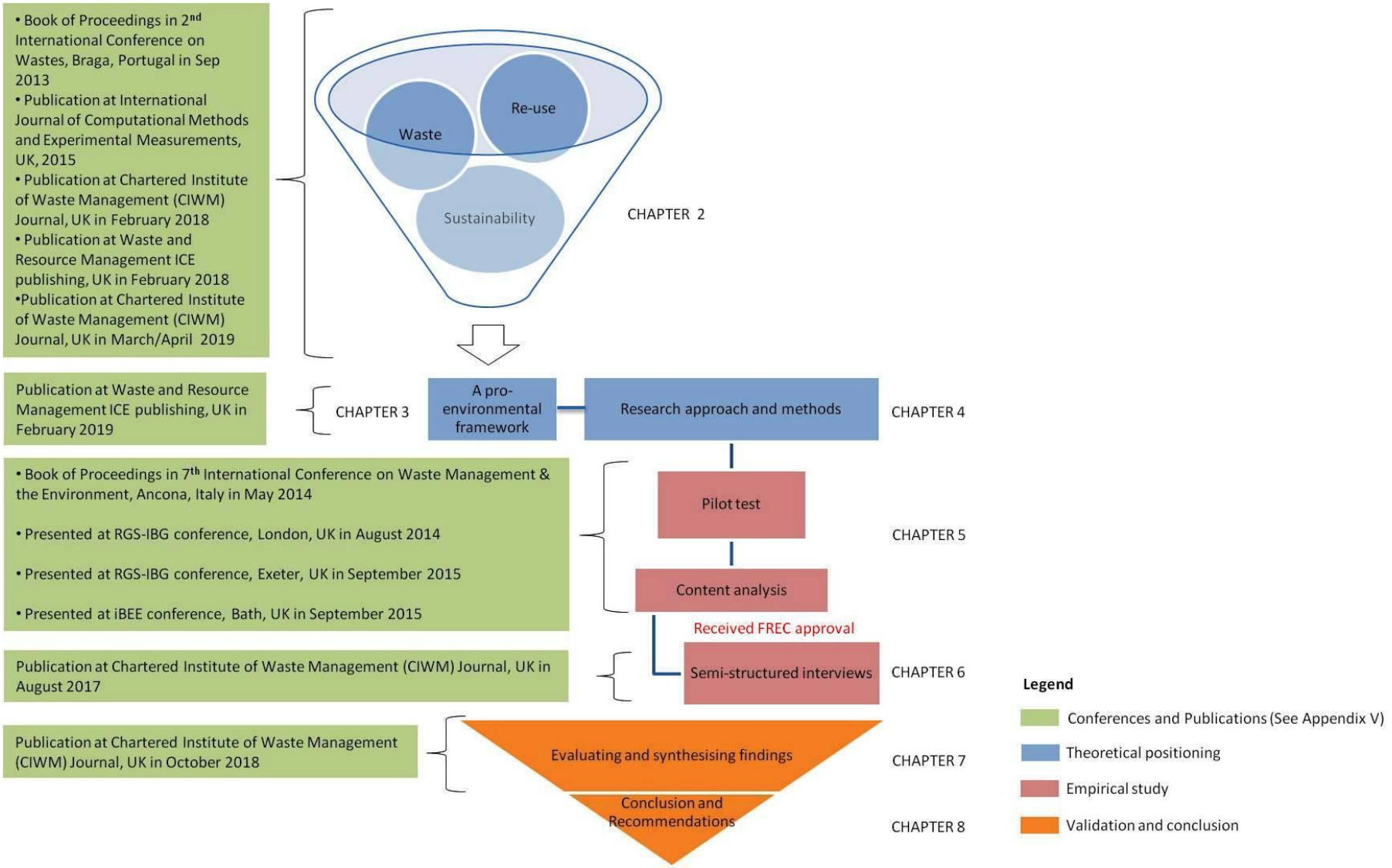


Figure 1.3: Thesis road map (outline)

Chapter 2 reviews studies presenting a critical analysis of technology-based and human-based waste management techniques. The chapter also examines the literature on re-use of materials, demonstrating the paucity of evidence and reiterating the complex and heterogeneous nature (and potentially contradictory) of the aim of this research.

Behaviour change is introduced in Chapter 3. It reviews studies on pro-environmental behaviour and uses them to develop an analytical framework tool for use within the subsequent chapters. The tool developed is CEBA (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap).

Chapter 4 explains the research approach and methods, with a focus on the thesis aim, objectives, and research questions. The chapter outlines the process adopted for data collection and analysis used in the empirical study. It argues for a mixed-methods approach and the adoption of content analysis (Chapter 5), and semi-structured interviews (Chapter 6) as the key research instruments. It reiterates the justification for the use of the CEBA framework as the analysis tool.

The results of the content analysis study are presented in Chapter 5. It begins with the findings of the pilot study of five UK organisational reports. As discussed above, these organisations are regarded as the vanguard in moving up the waste hierarchy, as they are selected from the WRAP 2012–13 business case studies. Appropriate application of the CEBA framework in the pilot study enabled a preliminary analysis. This preliminary analysis then facilitated a full content analysis for nine-month period from December 2013 to September 2014 of the organisational reports of all 36 organisations included in the WRAP 2012–13 business case studies.

The Nvivo software was used to organise the gathered data for critical analysis. The findings raised questions as well as suggested answers and prompted the decision to undertake in-depth, semi-structured interviews to provide rich data for deeper understanding.

Chapter 6 details the results of semi-structured interviews with 19 UK organisations, ten of which were taken from the content analysis and the remaining nine were from their re-use supply chains, which were sampled through the snowballing technique.

CEBA was used as an analytical tool to place the questions and Nvivo was used for systematically gathering the data for further analysis. Critical analysis of the semi-

structured interview findings revealed arguments that acted as the basis for the generation of collaborative re-use models.

Chapter 7 presents a graphical representation of collaborative re-use models. The chapter also provides evaluation and synthesis of the research findings. As part of the evaluation, the chapter validates the applicability of collaborative re-use models in real-life scenarios by revisiting five organisations from the semi-structured interviews and presents the reviewed collaborative re-use models (Appendix VI, Section 9.6.3). The chapter also synthesises this research by cross-referencing and integrating the theories, data, literature, and findings.

The final chapter (Chapter 8) reaffirms the research questions and aims and objectives of the study, as set out in Chapter 1 (Section 1.3). It concludes that, among these vanguard organisations, the extent to which re-use contributes to reducing consumption and waste production while maintaining economic returns varies by organisations and type of materials. Re-use is predominantly facilitated by third sector organisations (TSOs). However, the long-term effects of re-use are still unclear and, within this sample, the findings show that, at the time the empirical work was conducted, corporations preferred technological waste management techniques over the re-use option. That is, they have not yet embraced the circular approach to waste management where re-use is a normal corporate practice.

This research further emphasises the ambiguity and variations in the understanding of re-use among these vanguard organisations. In addition to the conclusions, the thesis puts forward some recommendations for both future studies and actions. In terms of the latter it suggests a revision to the definition of re-use in the waste hierarchy in order to reduce the apparent ambiguity surrounding the term.

2. CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter starts by reviewing the key literature on waste and sustainability, arguing that waste management and its control is primarily a function of technological development. Identifying the gap in this research, the chapter then goes on to explore the literature on re-use, a 'human action' solution within the waste hierarchy.

The second section provides a summary of the research background that was elaborated in Chapter 1 (Section 1.2). The section reiterates the gap in the existing studies while demonstrating the dominance of technological environmental solutions over human-based environmental solutions in the waste and resource management sector.

Section 3 develops the analysis of studies in the field of sustainability and waste management. This section of the research has formed part of an academic publication (Tavri, 2018b).

The fourth section reviews the key literature on re-use in the UK. It demonstrates the benefits of practising re-use and reiterates the focus of this research investigation. A part of this section has been published as Tavri *et al.* (2015); nonetheless, to acknowledge recent contributions in the field (at the time of this research), a few more studies have been added to this section.

The fifth section of this chapter defines the recognised stakeholders in the field of waste management. The final section summarises and concludes the chapter, which has formed part of a publication (Tavri, 2019b).

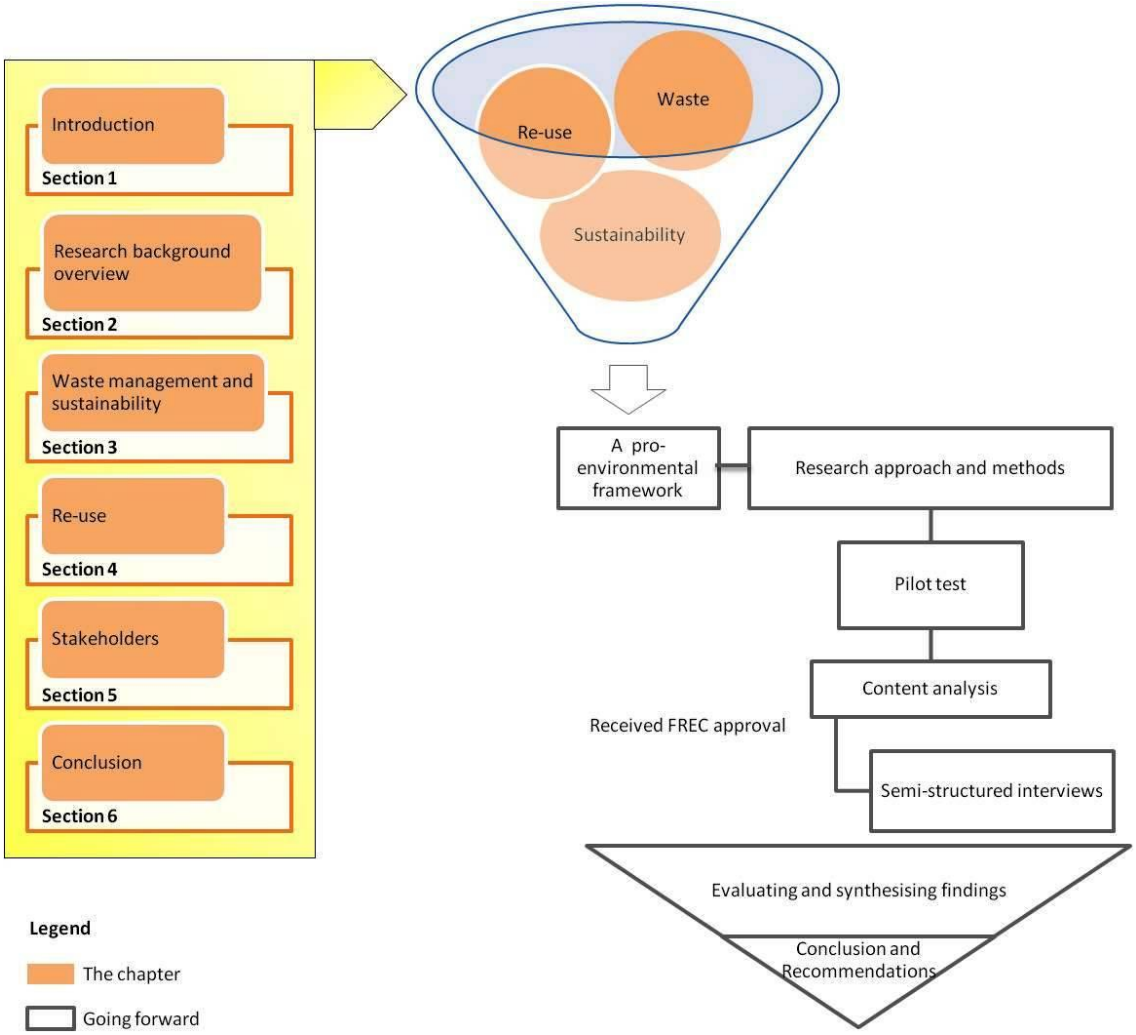


Figure 2.1: Schematic illustration of the literature review chapter

2.2 RESEARCH BACKGROUND OVERVIEW

In the UK, waste is defined by the Department for Environment, Food and Rural Affairs (DEFRA, 2012c, p.6) as 'any substance or object which the holder discards or intends or is required to discard'.

In the early eighteenth century, re-use was a common practice, with *bricoleurs* making a living by collecting, repairing and then selling discarded and unwanted re-usable items (Stresser, 1999). However, as discussed above (Section 1.2), due to the development of capitalism, and the affluence it created, the UK came to face various environmental and health issues due to waste, which required stringent regulatory measures for its control. This eventually led to the establishment of the currently dominant waste management techniques, namely recycling, recovery, and disposal. The prevalence of technological waste management solutions eventually led to the decline of re-use practice, as well as contributing to the contemporary disposal culture.

This study emphasises the global impact of increasing consumption and waste production in the UK and notes that the imperatives of economic development appear to be irreconcilable with environmental solutions (Chapter 1, Section 1.2). At present, technological advances in managing waste are contributing to economic growth. However, the figures presented in Chapter 1 (Section 1.2) indicate that these technological environmental solutions lack the capacity to reduce consumption and waste production.

Therefore, to understand the broader impact of waste management techniques on the modern economy and the environment, this thesis reviews key studies in the field of waste management and sustainability, and synthesises the arguments they present to provide a coherent overview of the current state of knowledge.

2.3 WASTE MANAGEMENT AND SUSTAINABILITY

An essential step towards the achievement of a balance between social, environmental, and economic growth (sustainable development) was Hawken *et al.*'s formulation of 'natural capitalism' in 1999. They defined natural capitalism as a form of capitalism in which 'economic progress can…take place in democratic, market-based systems of production and distribution in which all forms of capital are fully valued, including human, manufactured, financial, and natural capital' (Hawken *et al.*, 1999, p.9). The Organisation for Economic Co-operation and Development (OECD) defines human capital as 'the knowledge, skills, competences and other attributes embodied in individuals that are relevant to economic activity' (1997, p.40).

Pearce and Barbier (2000) subsequently differentiated between human capital and natural capital, which they associated respectively with weak and strong sustainability. The concepts of weak and strong sustainability are discussed in Section 1.2 in the literature review. Weak sustainability involves the use of technological solutions to reduce environmental degradation. On the other hand, strong sustainability entails a change in behaviour through 'human action' to protect the environment.

Continuing exploration of essential strategies to balance economic and environmental growth has led experts in the field to suggest a range of possible solutions. This section now surveys the proposals of some of the key experts.

Firstly, Urry (2011) suggests two approaches to tackling the problems presented by climate change: the 'science first' model and the 'human action' model. These two models are discussed in more detail below in Sections 2.3.1 and 2.3.2.

Secondly, the OECD introduced the concept of decoupling to describe the goal of tackling waste issues while maintaining economic growth. This is divided into relative decoupling and absolute decoupling (UNEP, 2011).

Thirdly, the Ellen MacArthur Foundation (EMF) emerged as a global thought leader by promoting the concept of the circular economy. An EMF (2013a) report indicates that the circular economy seeks to gradually decouple economic activity from the consumption of finite resources, and to design waste out of the system.

The OECD developed the concept of decoupling to break the link between 'environmental bads' and 'economic goods' (UNEP, 2011, p.4). Azar *et al.* (2002) state that decoupling strategies involve the use of environmental technologies, the effective use of materials, and a change in production and consumption patterns.

Jackson (2009) indicates that decoupling is divided into relative and absolute decoupling, which are closely related to the United Nations Environment Programme's (UNEP) dimensions of resource and impact decoupling (Figure 2.2). These terms are defined as follows:

> resource decoupling means reducing the rate of use of resources per unit of economic activity. Impact decoupling means maintaining economic output while reducing the negative environmental impact of any economic activities that are undertaken. Relative decoupling of resources or impacts means that the growth rate of the resources used or environmental impacts is lower than the economic growth rate, so that resource productivity is rising. Absolute reductions of resource use are a consequence of decoupling when the growth rate of resource productivity exceeds the growth rate of the economy. (UNEP, 2011, pp.4–5)

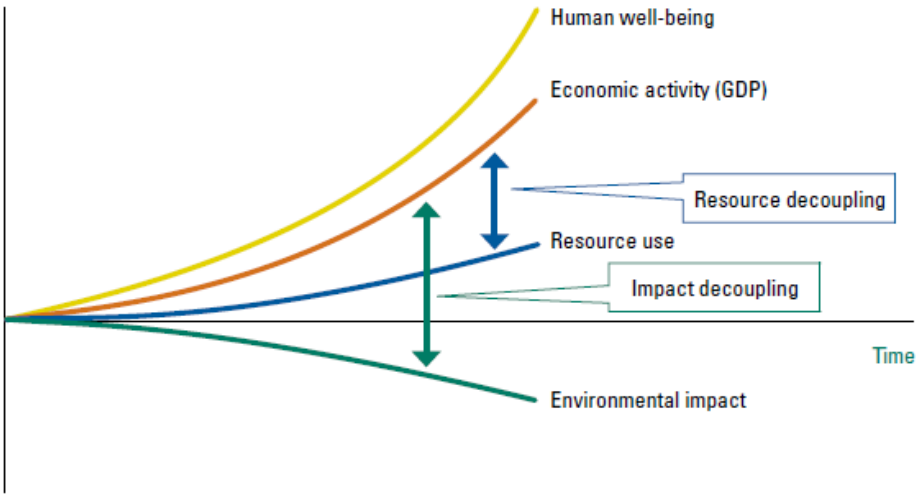


Figure 2.2: Representation of resource and impact decoupling (UNEP, 2011, p.5)

Technological processes progressing towards early carbon reduction are considered to achieve relative decoupling (Jackson, 2009). In contrast, absolute decoupling is defined as 'no waste growth' (Sgostrom and Ostblom, 2010, p.1550).

Along similar lines, the circular economy aims to gradually decouple economic activity, to move beyond the current take-make-dispose extractive industrial model (EMF, 2010). The three established principles of the circular economy are: designing out waste, designing for re-use, and regenerating the natural system (EMF, 2013a). The circular economy is defined as:

> an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models. (EMF, 2013a, p.3)

Preston (2012, p.2) defines the circular economy as 'a model for an industrial organisation that will help de-link rising prosperity from growth in resource consumption'. He considers it an approach that avoids discarding of materials by transforming waste into economic resources through several means, such as repair, re-use, and the upgrading of materials.

The circular economy is considered to be a smart economy by the European Commission (EC), which defines it as 'an economy based on knowledge and innovation' (EC, 2010, p.3). In *Waste Management and Sustainable Consumption*, Ekstrom (2015) observes that the smart economy transforms the linear extraction use-throw-away model of production and consumption into a circular one.

The EMF (2013a) identifies four key concepts underpinning the idea of the circular economy: regenerative design,[13] the cradle to cradle approach,[14] biomimicry,[15] and the

[13] Regenerative design is 'a system of technologies and strategies for generating the patterned whole system understanding of a place, and developing the strategic systemic thinking capacities, and the stakeholder engagement/commitment required to ensure regenerative design processes to achieve maximum systemic leverage and support, that is self-organizing and self-evolving' (Mang and Reed, 2011, p. 1).

[14] Cradle to cradle is an 'approach […] to see waste as food, as a nutrient for what's to come. It is about how to support the biosphere and how to support the technosphere. It is about being beneficial, about not panicking and destroying resources that we can pass on to our grandchildren and their grandchildren' (Braungart and Mcdonough, 2009, p. 5).

[15] Biomimicry is 'sometimes called biomimetic design; an emerging design discipline that looks to nature for sustainable design solutions' (Mang and Reed, 2011, p. 2). Benyus (1998) originally mentioned it as an innovation inspired by nature, where nature functions as model, measure, and mentor.

blue economy,[16] which are further identified by Elkington and Zeitz (2014) as forms of development that maximise economic profit while also carrying social and environmental benefits.

Along similar lines, Klein's study on capitalism and climate change refers to the circular economy as 'a plan to heal the planet that also heals our broken economies and our shattered communities' (Klein, 2014, p.155).

In a 2013 interview, Walter Stahel, the inventor of the 'cradle to cradle' approach, states:

> I prefer the term 'circular economy' or 'loop economy' to 'cradle to cradle'…because it is the economics that, for me, are the most important thing. And if we look at the economics, then it's very clear that the smallest loops – in other words, reusing, repairing, re-manufacturing and re-marketing goods and components in an industrial context – is where you get the biggest financial benefit, that being the lowest price for the consumer or the highest profit margin for the manufacturer. (MakingItMagazine.net, 2013)

Although the term 'circular economy' was first used in the 1970s, an EMF (2013a) report found that its precise origins cannot be traced. Nonetheless, its existence can be seen in some of the key studies from the late 1980s and 1990s. For instance, the Brundtland Commission's definition of sustainable development (Section 1.2) is consistent with the principles of the circular economy. Another example of the circular economy school of thought is the Krupp (1986) study focussing on environmental factors that aim to fulfil economic needs. Krupp emphasises the necessity of finding alternative methods of overcoming environmental issues so that the problems associated with a linear economy do not continue to recur.

These 40–50-year-old arguments remain relevant today, showing the need for long-term sustainable thinking and highlighting the recurring issues with the concept of the linear economy. Furthermore, such examples demonstrate an association between sustainability studies and the idea of the circular economy, and therefore indicate that strategies in the field of waste management being applied in the 2010s are addressing issues that were raised some four to five decades ago. The continued relevance of what, in many

[16] The blue economy is 'the model that generates options for economic development, ways by which economy responds to the needs of people' (Alexandru and Tasnadi, 2014, p. 200). The concept was first discussed at the Rio+20 United Nations Conference on Sustainable Development (UNCSD). The blue economy was described as 'an approach that has broad relevance as the oceans, including humankind's common heritage of the High Seas, represent in many respects the final frontier for humanity and its quest for sustainable development' (UNCSD, 2012, p. 1).

disciplines, might be regarded as 'outdated' literature underscores that the methods utilised for the last 40–50 years have been insufficient for tackling the problem.

Alongside these arguments, movements to reduce waste have also been viewed as technological issues, as discussed below.

2.3.1 Technological Environmental Solutions (the 'Science First' Model)

The 'science first' model involves the engineering of cleaner and more intelligent technologies (Urry, 2011), which are regarded by Hawken *et al*. (1999) as a means of providing potential solutions for adverse environmental impacts while facilitating economic growth. This section discusses examples of 'science first' technologies.

Reverse logistics is defined by Tibben-Lembke (1999) cited in Kumar and Tan's study on developing a decision-making model as

> the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or proper disposal (Kumar & Tan, 2006, p.332).

A similar example is the closed-loop supply chain (CLSC). In their analysis of the economics of re-use via CLSC, Atasu *et al*. characterise such systems as involving 'the design, control, and operation of a system to maximise value creation over the entire life cycle of a product with the dynamic recovery of value from different types and volumes of returns over time' (2008, p.483).

Another such technology is the product service system (PSS). The PSS is an innovative business model introduced by the Waste and Resource Action Programme (WRAP).[17] It involves

> service based upon delivering performance outputs – linked to products or services. The product may be designed for long life, short life or a mix depending upon the optimum output requirements. Products could also be designed for disassembly, remanufacture, and re-use.

A report from the Department of Environment, Food, and Rural Affairs (DEFRA) states that such technologies have been implemented in the waste industry to shift from the traditional end-of-pipe concept to a closed loop, whereby remanufacturing of materials is

[17] http://www.wrap.org.uk/content/innovative-business-models-old

facilitated to reduce waste production (DEFRA, 2009a). DEFRA defines remanufacturing as 'returning a used product to at least its original performance with a warranty that is equivalent to or better than that of the newly manufactured product' (2010d, p.7).

DEFRA (2010d) and the European Remanufacturing Network (ERN, 2015) note how recognition of the need to manage waste products has led to significant growth in remanufacturing in the UK mechanical and powered-machinery industry. In consequence, over 30 per cent of the industry's re-use value is typically has associated with remanufacturing. However, the studies emphasise that lack of consumer awareness regarding remanufacturing is a critical barrier to its facilitation. It has also been recognised by Atasu *et al.* (2008) in their study of CLSC that marketing and sales regard this as unprofitable.

In the UK context, there is a general difficulty in access to objective information about remanufacturing profits and reseller and consumer returns. While this is beyond the scope of this study, to shed light on it, international studies[18] were considered that address the complexity of the issues associated with the cost of these technological environmental solutions. These studies show that, despite some benefits, technological environmental solutions seem to act as a disincentive at the organisational level.

An empirical study by Kumar and Tan (2006) sought to create a decision-making model that could help manufacturers in Singapore to increase profits via reverse logistics. Through a strategic alliance between a manufacturer and an eco-non-profit organisation, the study identified some ways to increase profit for manufacturers, including effective gatekeeping; reduction in the costs associated with the purchase of remanufactured and refurbished parts. However, the study identified possible challenges, such as delayed deliveries from suppliers, as significant issues that can lead to potential losses in reverse logistics.

Khetriwal *et al.* (2009) used the example of reverse logistics to provide policymakers in Switzerland with crucial insights on implementing extended producer responsibility (EPR), in the form of the Ordinance on the Return, Take-Back and Disposal of Electrical and Electronic equipment (ORDEE)[19]. A working model was formulated to monitor and

[18] The literature revealed no information on the business case in the UK, therefore international studies was investigated.

[19] 'This Ordinance is to ensure that waste electrical and electronic equipment (WEEE): a do not enter municipal waste; b are disposed of in an environmentally sound manner. It governs the return, the take back and the disposal of WEEE; The regulations of the Ordinance of 22 June 2005 on the Movements of Wastes and the Ordinance on Ordinance on Risk Reduction related to Chemical Products of 18 May 20054 are reserved'(FOEN, 1998).

control the management of waste generated from electrical appliances through legislation and peer pressure. When purchasing goods, consumers were charged nominal recycling fees known as Advance Recycling Fees (ARF), stipulated by the Producer Responsibility Organisations (PROs) and recyclers. The results show that Producer Responsibility systems are vital when disposal costs are higher than recoverable costs. Furthermore, as this inclusive system does not differentiate between brands in taking back items, it not only helps customers but also aids retail distribution networks for reverse logistics and keeps complexity and costs down. However, a lack of knowledge among consumers about disposal methods makes them keep products beyond their use phase. Therefore, the study shows that although the WEEE (waste electrical and electronic equipment) Directive prioritises re-use, it has had limited success. This study is another instance of re-use value being associated with recycling and remanufacturing.

A theoretical study by Feldmann *et al.* (1999) aimed at integrating assembly and disassembly systems: a CLSC at the industrial level in Germany. Their study was prompted by the lack of a systematic and automated approach to de-production and disassembly. The study identified principles and factors required to increase the potential of discarded products and a parallel concept to run assembly and disassembly systems simultaneously. However, it concluded that, paradoxically, the integration of assembly and disassembly systems seems to create higher costs for remanufacturing and refurbishing within the maintenance sector.

The studies discussed above identified some key limitations of the 'science first' model, or technological environmental solutions. These are, primarily, a lack of knowledge among customers about the technological examples; lack of understanding among organisations of the difference between re-use and remanufacturing; and lack of clarity within organisations about cannibalisation (displacement) of new products and its effect on profitability.

Despite these limitations, technological environmental solutions remain dominant in the UK, where even the concept of the circular economy is being applied in the form of technological solutions, for businesses to enhance materials' longevity (EMF, 2013b). One example is a tool developed by WRAP for the construction industry, which aims at 'designing out waste' (the first principle of the circular economy). The tool is called the 'Designing out Waste Tool for Buildings' (DoWT-B). It assists designers in reducing waste, and also has several other benefits, including cost savings and carbon emission reductions (WRAP, 2010). However, recent DEFRA figures show that waste arising from the construction sector in the UK in 2012 contributed almost half (50 million tonnes) of

all waste generated (DEFRA, 2015b). This is despite the dominance of technological waste management techniques.

The appeal of technological environmental solutions may be reinforced by the need for organisations to take advantage of advances in technology. In other words, organisations are keen to be perceived as more 'advanced' by keeping pace with technological developments, which also protects them from takeover by competitors. However, this research argues that such views may detract from organisations' more long-term and holistic thinking. Atasu *et al.* (2008) agree that purely technological approaches are insufficient: they fall short because they do nothing to change what amounts to unsustainable consumption behaviour.

The failure to see the benefits of human-based environmental solutions and their long-term impact is further expounded by Urry (2010), in his study of consumption. Urry argues that focus remains primarily on technological environmental solutions because the global corporate dominance of the lives of workers and consumers serves to mask the potential impact of human-based environmental solutions. The section below elaborates on this while providing evidence on how adopting 'human action' solutions can contribute to the achievement of strong sustainability.

2.3.2 Human-based Environmental Solutions (the 'Human Action' Model)

The United Nations Development Programme's (UNDP's) Human Development Index (HDI) indicates that from 1990 to 2014, the UK's per capita carbon dioxide emissions decreased from 9.7 to 6.5 tonnes, a reduction of almost 33 per cent. However, the HDI figures also show that in 2018, the UK per capita carbon dioxide emissions are the 14th highest in the world (World Bank, 2018).

Such concerns are bolstered by data from the Global Footprint Network (GFN, 2018). Figure 2.3 shows the extent to which, under a business-as-usual path, human demand on the Earth's ecosystems is projected to overshoot if all of humanity were to consume at the same rate as people in the UK. The calculation shows that in 2014 global bio-capacity was one global hectare (gha) per person, while the UK's ecological footprint was 2.85 gha per person. In other words, in 2014, it would require 2.85 Earths to sustain consumption at the UK's rate on a global scale.

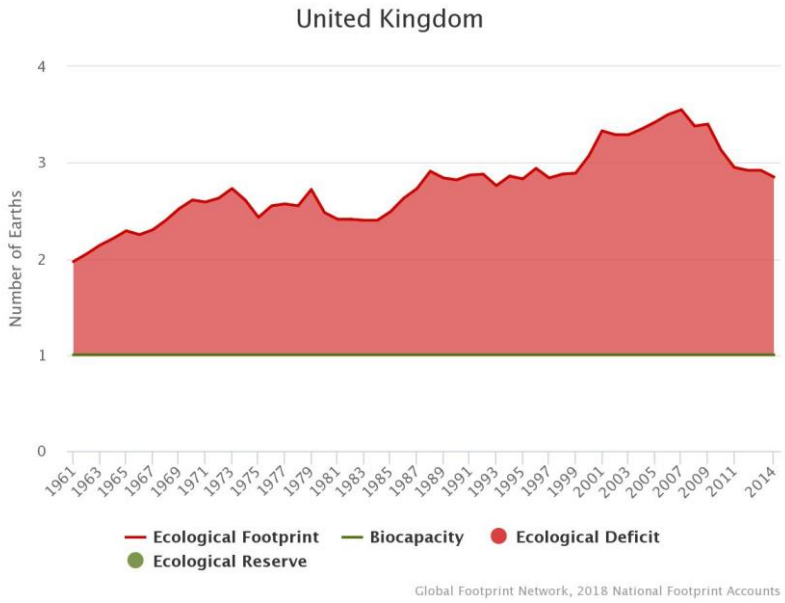


Figure 2.3: National Footprint Accounts 2018 edition (Data Year 2014); building on World Development Indicators, The World Bank (2016); UN Food and Agriculture Organisation (GFN, 2018)

While demonstrating the consequences to human life and society, Lynas (2008) notes that there is reasonable stability in the 'science first' model of climate change. However, solutions through 'human action' have not been well established. He further emphasises the concern that if current rates of global warming persist, average temperatures may rise by up to six degrees within the next hundred years.

The unsustainable situation is detailed further in the 2018 Tyndall Centre report. The report notes that the Paris Agreement provides a clear and agreed climate mitigation target of stabilising global surface warming to under 2 ºC above pre-industrial levels, and preferably closer to 1.5 ºC. However, based on current scenarios, the report concludes that there is significant uncertainty about the sensitivity of the relationship between global warming and cumulative carbon emissions (Goodwin *et al.*, 2018).

The emphasis on adopting 'human action' or interactions, which create strong sustainability, was proposed in Baker *et al.*'s (1997) study of the politics of sustainable development over 20 years ago. They indicated a need to develop a sustainable system where human beings can flourish within the ecological limits of a finite planet through human interactions. Along similar lines, Pearce and Barbier (2000) argue that there is a vital need to invest more time and energy into solving the issue of sustainability through 'human action' solutions, rather than simply concealing it with further technological advances.

Urry (2011) further suggests that to control various resource shortages, strategies need to be created to induce people around the world to behave differently, thereby creating more

potential for the success of 'human action' solutions. Urry defines 'human action' as the ways in which societies are organised and reorganised to change the likely consequences of climate change. This implies changes in behaviour as opposed to technological changes.

The need to adopt human-based environmental solutions that can play a part in achieving an absolute decoupling is also emphasised by Sgostrom and Ostblom (2010) in their study on decoupling waste generation from economic growth. They contend that achieving absolute decoupling is a way of unravelling the current unsustainable connection between the opposed forces of conventional economic development and the reduction of waste growth, and fostering a more positive relationship between the two.

The UNEP report (2011) on decoupling specifies that one way of achieving absolute decoupling is by increasing resource productivity to alleviate the problem of scarcity. In essence, in absolute decoupling, the impact on the environment is less than the economic growth rate, which means that resources are being used more wisely and cleanly. Fell *et al.* (2010) in similar terms describe absolute decoupling as the process of separating economic growth from the associated negative environmental impacts.

In 'The Myth of Decoupling', Jackson (2009, p.67) argues that 'the situation in which resource impacts decline in absolute terms is called "absolute decoupling"'. Needless to say, this latter situation is essential if economic activity is to remain within ecological limits. Similarly, Chatterton and Style (2001) describe absolute decoupling as a means of achieving a middle ground or consensus between conventional economic growth and waste reduction to protect the environment. Examples below further emphasise the need for achieving absolute decoupling.

Giljum *et al.* (2005) study of strategies and instruments for developing absolute decoupling shows that achieving relative decoupling through material inputs and energy use is an insufficient solution to the increasing burden being placed on the environment and resources. Therefore, absolute decoupling must be an overarching goal to decrease existing environmental pressures. Gertsakis and Lewis (2003) and Mazzanti and Zoboli (2008), both of which consider waste management techniques and policies, similarly argue that just achieving relative decoupling (through recycling and waste to energy recovery) is inadequate for tackling the contemporary unsustainable situation. They further suggest the need for deliberate and decisive human action solutions for the prevention of waste or prolonging the life of materials.

In their study on decoupling waste generation from economic growth, Sgostrom and Ostblom (2010) observe that all economic growth carries with it a concurrent increase in waste production. They note that stakeholders in the waste management sector have focused on reducing the negative environmental impact of waste through technical means. However, there has been very little attention to the efficient management of resources and decreasing consumption. The study indicates a need for focussing on achieving absolute decoupling to tackle the current waste and consumption problems.

Jackson (2009) describes a system for achieving absolute decoupling through a structural change in society brought about through policy changes that promote a sustainable lifestyle. He comments that

> our technologies, our economy, and our social aspirations are all misaligned with any meaningful expression of prosperity. The vision of social progress that drives us – based on the continual expansion of material wants – is fundamentally untenable…. In the pursuit of the good life today, we are systematically eroding the basis for well-being tomorrow. (2009, p.2)

Wijkman and Rockstrom make a similar point in their work on the magnitude of the global environmental challenges and resource constraints, arguing that

> there is much in society that needs to grow and develop, such as culture, education, and research, investment in environmentally friendly technologies and infrastructure, health and social care for children and the elderly. But it must be done within a framework where the throughput of energy and materials in the economy is not constantly increasing. If the economy could develop in this direction it could mean an inevitable end to the throw-away mentality and wasteful practices that dominate consumption pattern and business model today. (2011, p.18)

The following section provides an overall analysis and discussion of technological and human-based environmental solutions.

2.3.3 Discussion

In reviewing the key literature on technological and human-based environmental solutions, this thesis perceives a commonality between these solutions and waste management techniques. The dominant waste management techniques (recycling, recovery and disposal), the circular economy technological principles, and the examples of the ‘science first’ model facilitating remanufacturing (reverse logistics, CLSC, and

PSS) are all strategies for achieving relative decoupling. They are all technological processes aiming at early carbon reduction, which Jackson (2009) identifies are the steps towards relative decoupling. Nonetheless, these technological solutions have been shown to be unable to resolve the seemingly irreconcilable dichotomy of decreasing consumption and waste production while simultaneously maintaining economic returns. Therefore, for this study, the dominant waste management techniques (recycling, recovery, and disposal) are identified as weak sustainable solutions, which further implies that the 'science first' model solutions can be considered weak sustainable options.

It should be recognised that technological developments and their adaptation by the growing waste and resource management industry certainly represent positive outcomes in terms of their contribution to achieving decoupling. However, the issues of climate change, increasing use of resources, rising consumption and growing levels of waste production demonstrate that the technological environmental solutions favoured by the industry are insufficient. In the UK, this is particularly true at the organisational level, where there is a continuous increase in waste production (4.85 per cent in a period of just 2 years – between 2010 and 2012), in contrast to that observed at the household-level (which saw a 2.2 per cent decrease during the same period of time) (DEFRA, 2015).

The literature above points to the current need to adopt human-based environmental solutions, and reiterates that in the field of waste management, re-use of materials, the second principle of the circular economy, is a purely human-based activity. Thus, it can be inferred that re-use of materials, a 'human action' approach to climate change and a strong sustainable option, can contribute to achieving absolute decoupling. Therefore, the research now goes on to explore the existing key literature on re-use.

2.4 RE-USE

As discussed in Chapter 1, re-use activity was a common practice in managing waste long before the introduction of the waste hierarchy. Humans produced a relatively small amount of waste, comprised primarily of wood, bones, animal remains, vegetable matter, and ash. At this time, re-use of materials was a common practice, with *bricoleurs* operating as a private enterprise to collect unwanted household items, repair them, and then sell them to merchants (Strasser, 1999).

As clarified above in the discussion of the UK waste journey (Section 1.2.1), the withering of re-use practice started with the initial development of waste management services in 1863. Technological innovations offered various alternatives for the disposal of unwanted

materials, which often presented a more convenient option than re-use (Strasser, 1999; Williams, 2005). For instance, Chazan's (2002) study of litter indicates that the use of landfill had a special attraction for municipal waste managers, as a cheap and convenient option for waste disposal. The development of waste management services was also an important factor in the transition to consumer culture, 'a complicated and gradual process, characterised by abundant continuities' (Strasser, 1999, p.114).

Even today, the term 're-use' is overshadowed in the waste hierarchy by the umbrella term 'preparing for re-use', which, as shown in Figure 2.4 below, is relatively recent. 'Preparing for re-use' is defined by DEFRA as 'checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing' (DEFRA, 2013b, p.4). The various actions that comprise 'preparing for re-use' are specified as:

> Avoidance: reducing process waste, buying fewer items;
>
> Reduction: designing products so they last longer and are used for longer (including upgradability and reparability and ease of disassembly). Also, using less materials per unit and reducing the use of hazardous substances in materials and products;
>
> Re-use: buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed);
>
> Remanufacturing: restoring a product to a like-new condition by reusing, reconditioning and replacing parts (other terms used include refurbishment); and
>
> Repair: repair and/or replacement of a component part in a used item. (DEFRA, 2013b, pp.4–5)

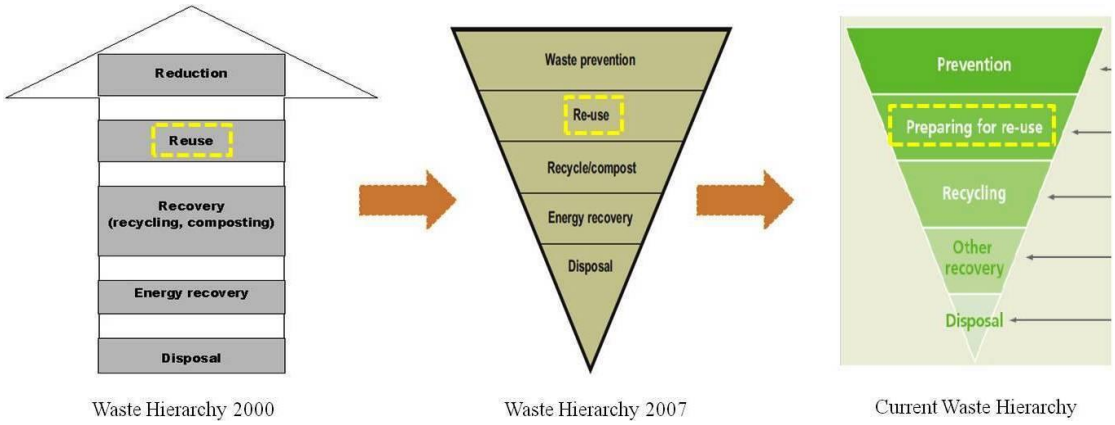


Figure 2.4: Development of the waste hierarchy (FoE, 2001; DEFRA, 2007; DEFRA, 2013b)

Notably, re-use has gone from being a main category in the 2000 and 2007 versions of the waste hierarchy (See Figure 2.4) to being incorporated within 'preparing for re-use', and is listed as merely an action.

Placing 're-use', a human-based action, under the same umbrella in the waste hierarchy as the technological action 'remanufacturing' is liable to cause confusion and misperception among organisations as to the difference between remanufacturing and re-use of materials. Such a misperception is indeed evident in Section 2.3, where examples of technological environmental solutions show organisations associating re-use value with remanufacturing. This association of the two categories therefore creates ambiguity and uncertainties with regards to the meaning of the term 're-use'.

This is borne out by a review of the varying definitions of re-use provided by different bodies, ranging from the international to the national, to regional and local authorities (see Appendix I, Section 9.1.3). The definitions demonstrate variations in the understanding of what constitutes re-use (and in how to engage in re-use behaviour). They also focus on different aspects of re-use, ranging from the item's physical form to the socio-economic value of re-use, and demonstrate an ambiguity regarding 'purpose'. This latter confusion appears to centre on the question whether re-use of materials means using items for the 'same purpose', or can it also be fulfilled by re-using items for an 'alternative purpose'?

Such variations and inconsistencies in the definition of 're-use' make it unclear and difficult to quantify. In particular, it is difficult to establish which definition the UK stakeholders are employing. This ambiguity is also apparent at the household-level, where local authorities report re-use with recycling figures (Letsrecycle, 2018). Furthermore, as Taylor observes, to most people outside the waste sector, 're-use' and 'recycle' are essentially synonymous (Taylor, 2018). This uncertainty as to the meaning of 're-use' and its association with recycling and remanufacturing demonstrates the vagueness around the term, and may be part of the reason why it has been subsumed within the category 'Preparing for re-use'. Therefore, this research investigation uses the most recent (at the time of the research) definition in the empirical study. According to this definition by DEFRA, re-use is 'buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed)' (2013b, p.5).

2.4.1 The UK Re-use Literature

This section reviews studies evaluating successes in and barriers to facilitating the re-use of materials in the UK. It also considers the capacity of this 'human action' solution to contribute to achieving a balance between reducing consumption and waste production, while maintaining economic returns. Nonetheless, the section reveals a paucity of literature on the re-use of materials at the organisational level.

2.4.1.1 Re-use: Opportunities and Challenges

In their study on the prospects of third sector organisations' (TSOs) involvement in re-use, reclamation, refurbishment, and repair works, Sharp and Luckin (2006) identified these 'human action' activities as predominantly serving low-income families. In 2002, Sharp and Luckin conducted national and local surveys of community waste projects (CWPs). The national survey involved the distribution of questionnaires to the Community Recycling Network (CRN), an umbrella organisation of community groups, cooperatives, and not-for-profit businesses in the community waste sector, which was made up of 195 full members. Six local authorities were surveyed to ensure the robustness of the investigation. The results showed that a large number of CWPs deliver a variety of environmental services that can be considered to be human-based solutions involving the reclamation of furniture or white goods, IT equipment, and paint. Sharp and Luckin further note that these services also involve socio-economic benefit to society by providing training.

Successful collaboration between TSOs and local authorities in facilitating the re-use of materials is also indicated by the London Community Resource Network (LCRN) in its 2008 report. The report shows that bulky waste diversion from landfill to re-use increased by 73 per cent in 3 years (2004–07), leading to significant social and economic benefits for people in low-income groups (LCRN, 2008).

At the national-level, DEFRA (2009a) explores the benefits of TSOs in facilitating re-use activities. The paper shows the results of a 2005 survey, which indicated a diversion of approximately 500,000 tonnes of re-usable items in a year from landfill by 1,000 TSOs in England. The study shows that despite the majority of TSOs being small, local operations, around 7 per cent had an annual income of over £1 million, and 20 per cent operated regionally or nationally. DEFRA evaluated the benefits of TSOs via the social return on investment (SROI) method in five case studies. The results showed that the case study TSOs link closely with local authorities' agendas around a number of issues. These

include environmental sustainability, local economy, well-being, tackling exclusion, and promoting equality and a stronger community. The results provide evidence of re-use of materials generating a positive value at the national-level, including the environmental benefits from reductions in landfill disposal, carbon emissions, and consumption of new goods. The report also shows evidence that TSO re-use activities create additional value locally.

In their study evaluating the role of TSOs in managing discarded household furniture and appliances, Curran and Williams (2010) indicate the socio-economic and environmental benefits from the re-use of materials. They gathered data from 249 organisations in the UK using website analysis, site visits, and interviews. Their results showed that the two major sources of re-use items are public donations and retailers, and that around 76 per cent of these items are redistributed to low-income groups.

Cottrell (2013) presents a local study of collaboration between Surrey County Council and the Surrey Re-use Network (a TSO involving six charities), leading to socio-economic and environmental benefits. The Surrey Re-use Network collects and donates good quality kitchen appliances and home furniture and sells them at affordable prices. In 2011–12, TSOs within the Surrey Re-use Network collectively diverted over 22,000 household items from landfill to re-use, saving approximately £40,000 in landfill tax and creating over 100 volunteering opportunities and ten full-time jobs.

A similar example is the Community Action Group project in Oxfordshire. This was initiated in 2001 to provide support and funding for community groups, enabling them to hold events and initiatives that aid in reducing wasted resources and carbon emissions. The initiative started with six events in 2001 and had grown to 50 events by 2013 (CAG, 2014).

The studies of re-use of materials surveyed above show that TSOs and local authorities act as facilitators for household-level re-use of materials. The consequences of positive engagement include social, economic, and environmental benefits, such as reducing landfill, job creation, lower carbon emissions, improved well-being, stronger communities, and benefits for low-income families. Nonetheless, key barriers to making re-use a long-term practice include factors such as the location and logistics of collection and redistribution processes, lack of consumer confidence in local repair organisations, and lack of knowledge and skills among TSOs. These are discussed below.

A study of residents' satisfaction levels with bulky waste collection services indicates that the proximity and accessibility of re-use centres are crucial factors in encouraging

households to use TSOs for such services. Curran *et al.* (2007) conducted this study in Bath, Swindon and Portsmouth, where they interviewed recycling officers, bulky waste collection managers and staff at household waste recycling centres (HWRCs). They found that TSOs struggle to run re-use schemes, due to poor funding, which creates a barrier, as households are conscious of the associated costs of re-use. Therefore, very little headway is made towards practising re-use in these areas. Furthermore, there was little evidence of working partnerships between TSOs, HWRCs, and local authorities.

The LCRN report from 2008 presents a 2006 study by London Remade, which focused on promoting re-use of materials among residents by local authorities in collaboration with TSOs. Based on responses from both TSOs and local authorities, the study identified common barriers to sustaining re-use activity as including lack of space, lack of funding and inadequate measuring and monitoring. According to the report, in 2008 London had over 600 TSOs delivering re-use services, but less than 10 per cent of these measured or monitored their activities (LCRN, 2008).

Alexander *et al.* (2009) investigated the effectiveness of furniture re-use organisations (FROs) and their relationship with local authorities, using various assessment tools, including cost-benefit analysis (CBA), life cycle assessment (LCA), environmental impact assessment (EIA), and social impact assessment (SIA). The results identified communication, information, location, and knowledge dissemination as four critical factors in achieving greater re-use of bulky household waste. The study also found that a lack of qualified expertise in testing and sorting bulky waste for re-use posed a further barrier to re-use longevity.

These factors and barriers are discussed in the Third Sector Research Centre's (TSRC) 2012 report. It indicates that TSOs offer significant strengths in facilitating re-use of materials among individuals and households, such as innovation, trust, and proximity. However, these benefits are overshadowed by common barriers such as lack of expertise, knowledge of communications, space, funding and resources for the re-use of materials (TSRC, 2012).

An example of the failure of a TSO in conducting re-use activity is further demonstrated in a CBA study of bulky waste re-use by Alexander and Smaje (2008). It shows that quantitative evidence fails to provide a full picture of TSO effectiveness regarding their social and economic value. Furthermore, the study indicates that despite policy support from local authorities, social and educational barriers have limited the success of re-use

initiatives. However, despite these challenges, TSOs continue to work at transforming re-use activities into a success.

One recent example is the community-wide 'Restart Project', which is identified as a successful example of the overcoming of educational, knowledge and communication barriers by Cole and Gnanapragasam (2017) in their study of community repair. Cole and Gnanapragasam report that at the household-level, there are avid seekers of re-use options for products that are no longer needed. Furthermore, it was found that participants particularly valued the social aspect of repair, which leads to the re-use of materials. Community-wide repair and re-use projects play an important role in providing environmental education through network events, which offer considerable potential for empowering communities to attempt the repair and re-use of materials, thus enabling the extending of the lifetime of products.

Motivating customers is also identified to be an important decision-making factor among buyers of second-hand mobile phones. Wieser and Troger (2017) explored the replacement, repair and re-use of mobile phones in Austria using a mixed methodology, whereby 988 quantitative surveys were conducted along with 25 qualitative household interviews. They identified that despite the motivation of households to engage in re-use, perceived obsolescence is a major factor in the preference for new phones over second-hand. Wieser and Troger identified three forms of perceived obsolescence: 'basic functionality, up-to-dateness, and ability to keep up with social practices' (2017, p.1).

Studies so far illustrate a number of factors. Firstly, re-use of materials is primarily focused at the household level rather than the organisational level. Secondly, re-use of materials is mainly targeted at meeting a social need – that is, to provide good quality re-used items for low-income households. Finally, the studies demonstrate the commitment and determination of TSOs to gather the resources they need to support their charitable and social aims. Nevertheless, the studies also indicate some common barriers. For instance, customers' perceptions of obsolescence, and TSOs' lack of skills, knowledge, and logistics, combined with under-funding and weak measurement and monitoring systems, are typical obstructions that hinder TSOs from establishing viable social enterprises offering re-use activities.

In 2017, Cole *et al.* conducted a study involving semi-structured interviews with two organisations carrying out re-use activities, a TSO and a private company. The study concludes that both organisations' operations produced social benefits, such as supplying cheap items to people and providing employment or training to volunteers. However,

Cole *et al*. also identified quality, customer acceptance and maintaining logistics as major challenges. Thus, they recommended that 'developing a generic standard, or quality label for re-used items that provide better and [more] reliable information about functionality and lifespan could assist in addressing issues of public confidence in purchasing second-hand items' (Cole *et al.*, 2017, p. 159).

In his paper on 'Shaping the Circular Economy', Preston (2012) indicates that at present there are thousands of organisations involved in changing consumption patterns that could help shift global resource trajectories away from business as usual. Two such organisations focussing on the re-use of materials are Freecycle and eBay. Freecycle is a nonprofit movement based on the re-use of materials and keeping reusable goods out of landfill (www.freecycle.org). eBay is an international e-commerce company that allows customers to sell and buy second-hand items online (www.ebay.co.uk). Preston (2012) concludes by sharing a list of practical steps that could be taken by organisations in the pursuit of a circular economy. They include sharing best practice and knowledge, smart regulation, standardisation, raising public awareness, setting credible benchmarks and support for developing countries.

The above two examples illustrate both the local and global impact of re-use and the circular economy as a whole at the organisational level. To gather further evidence of re-use of materials at the organisational level, a Google Scholar search was conducted for 'waste re-use and organisational behaviour', with the year parameters set to 2000–2016. The search results returned 788 studies matching organisational behaviour with the following areas: sustainability/environmental impact, waste management, solid waste management, recovery, recycling, re-use, and prevention (Figure 2.5).

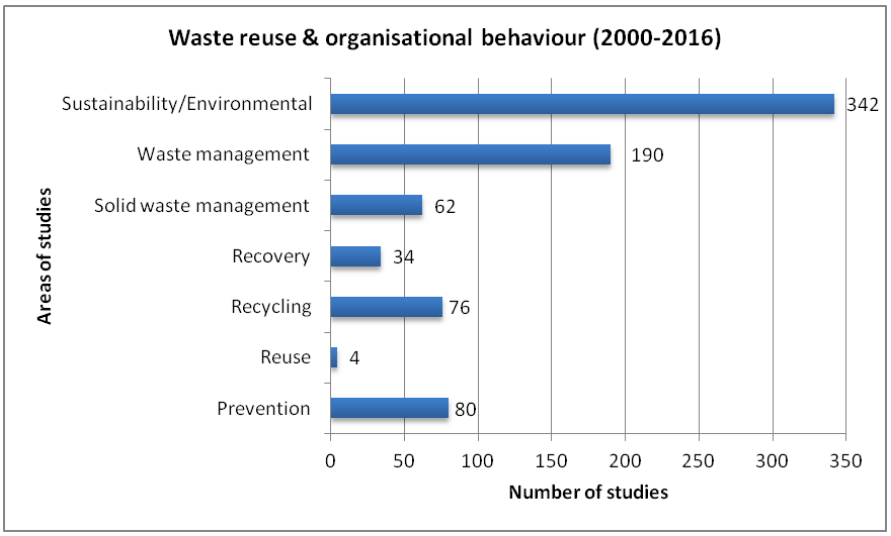


Figure 2.5: Waste re-use and organisational behaviour literature (2000–2016)

Figure 2.5 shows that only four studies of organisations' behaviour and re-use of materials were found (constituting only 0.5 per cent of the search results).

Furthermore, these four studies related to specific materials or specific organisations. They are re-use of dinnerware in the cafeteria (Manuel *et al.*, 2007), re-use of industrial materials (Park, 2014), re-use of items at car boot sales (Gregson *et al.*, 2013), and re-use of electronic items (Dindarian *et al*., 2012). Moreover, only two of them are related to the UK.

Firstly, the car boot sale study suggests that the policy goal of enhanced re-use activity might best be achieved by working with the existing consumer culture. This is because households do not associate car boot sales with reducing consumption through re-use, but rather with a culture of thrift (Gregson *et al.*, 2013).

Secondly, the study on re-use of electronic items relates re-use value with remanufacturing. Furthermore, the study indicates similar limitations to those mentioned in the technological studies. For instance, lack of knowledge of disposal routes for end-of-life products, and cannibalisation of new products leads a large proportion of consumers to discard items such as microwaves and refrigerators in favour of new more up-to-date models (Dindarian *et al*., 2012).

These studies suggest a paucity of evidence for re-use of materials at the organisational level in the UK. Nevertheless, the examples below demonstrate the social, economic, and environmental benefits of re-use activities.

DEFRA's 'Waste Prevention Programme for England' predicts, on the basis of economic analysis, that by adopting simple measures (such as re-use of materials), UK businesses could save around £17 billion and avoid greenhouse gas emissions equivalent to 16 million tonnes of carbon dioxide emissions (MtCO2e) annually. This represents around 3 per cent of the UK's carbon dioxide emissions and 4 per cent of gross UK business profit. Trading unused electrical appliances and garments could contribute £2 billion to UK gross domestic product (GDP) (DEFRA, 2013b).

Similar potential economic benefits of re-use are reported by Beasley and Georgeson (2016) in their study of re-use of materials, conducted in 2013. They note that the Local Government Association (LGA) estimates that councils could save £60 million a year in landfill tax, as well as realise an economic value of around £375 million – a total of up to £435 million of cost available each year if they divert 660,000 tonnes of goods and materials to re-use.

Furthermore, according to the Office for National Statistics (ONS),

> the purchase of second-hand goods prevents the production of equivalent new products which in turn reduces the consumption of natural resources and the amount of waste going to landfill. Therefore, ONS have decided to include second-hand shops within the resource management category of the EGSS. (2015, p. 38)

Socio-economic and environmental benefits of re-use are demonstrated in Tavri *et al*. (2015a), an account of their one-year study of the Selby Trust, a London-based TSO. The study aimed to set up a social enterprise around re-use of construction materials in the Selby Trust. The study involved twelve site visits for induction, interviews, and group discussions with employees. It found that 'a total of around 30 tonnes of estimated potential carbon savings (CO_2) and £43,000 worth of existing reusable materials had been accumulated at the Selby Trust. While this sum may seem small; it was a "quick win" of some 5 per cent of the Selby Trust's annual income' (Tavri *et al.*, 2015a, p. 298). Furthermore, this transformation of re-use into a social enterprise activity provided volunteering opportunities for residents.

Given the key literature on re-use and the evidence of benefits discussed above, it seems clear that re-use of materials, a 'human action' environmental solution, can play a part in balancing the current unsustainable levels of consumption and waste production. Re-use helps in minimising waste and limiting the rise in consumption while maintaining economic returns.

Despite the paucity of evidence on organisational re-use of materials, it should be acknowledged that there are several organisations involved in re-use activities, such as charity shops and other high street retailers selling second-hand goods. Furthermore, corporations are also involved in these re-use activities as donors of products to charities or TSOs. Some of the key UK organisations involved in this activity include the Charity Retail Association, the Re-use Network, Warp It, and REBus, the EU Life+ funded project on developing resource-efficient business models (see Appendix I, Section 9.1.1, Table 9.1; WRAP, 2018h).

The next section looks at the key stakeholders in the field of waste management and details the selection of stakeholders for this research investigation.

2.5 STAKEHOLDERS

This thesis identifies four key sets of stakeholders, each representing a distinct role in the consumption and waste production cycle. The first of these is private organisations or businesses, hereafter referred to as corporations; the others are the government, households, and TSOs.

Since the Industrial Revolution and the rise of capitalism, corporations have been recognised as major sources of waste production and drivers of the transition to a society where goods became increasingly disposable. Corporations remain key stakeholders in the production and disposal of waste (Castagna *et al*., 2013; Hawkins and Shaw, 2004; Strasser, 1999). This study looks at corporations in the waste services**,** manufacturing, retail, and construction sectors, whose perceptions of and engagement in re-use activities are explored as part of the empirical study.

Companies within the waste service sector own and operate the most sophisticated treatment facilities and are members of the Environmental Services Association (ESA), formerly known as the National Association of Waste Disposal Contractors (NAWDC)[20] (Holmes, 1983). Waste service companies play a major role in the use of technological solutions (recycling and other recovery), as opposed to engagement with 'human action' solutions (re-use), in the waste hierarchy.

Another key stakeholder in waste management since waste first became a political issue in the UK is the government. DEFRA is the government department responsible for waste management issues, and the Environment Agency deals with statutory regulations under the Environment Protection Act 1990, such as the duty of care and waste directive (Hawkins and Shaw, 2004; Williams, 2005).

As discussed in Chapter 1 (Section 1.2), the first state-run waste management services were introduced in 1863. In 1975, the EC introduced waste directive to govern and control the management of waste, which was adopted and followed by the UK government, and the regulatory framework has been overseen by the Environment Agency (Hawkins and Shaw, 2004; Williams, 2005).

A third key stakeholder is the public and households. In his study of household waste management in eastern England, Hakami observes that the public plays 'an essential role

[20] Private waste contractors are beginning to take over what was previously considered a public works activity. In 1968, contractors came together to form the NAWDC, now the ESA (Holmes, 1983).

in household waste management, since it is individuals who purchase goods, use them and finally make decisions regarding their disposal' (2009, p.32). Although this thesis does not focus on the public as a stakeholder, it is important to recognise that individuals and organisational behaviour are intertwined (Campbell, 2007; Cleek and Leonard, 1998; Thomas *et al.*, 2004) and any changes at the organisational level can subtly affect the consumers, households, and public behaviour (Urry, 2010). For an example of such interaction see Tavri (2018a).

Finally, another key group of stakeholders is TSOs, including voluntary and community organisations, charities, social enterprises and cooperatives, both large and small (DEFRA, 2013a). DEFRA (2013a) states that TSOs are also known as non-governmental organisations (NGOs), and play an important role in achieving national objectives, as they operate at the core of social and environmental change. DEFRA characterises the third sector as diverse and passionate, with TSOs sharing common characteristics, including independence from government, being value-driven and operating on the principle of reinvesting any financial surplus in pursuit of social, environmental, or cultural objectives.

In 2010, to encourage community involvement in decision-making processes and promote a wider role for voluntary activities, charities, and TSOs, the government introduced the concept of the 'Big Society' as a means of empowering communities and encouraging pro-environmental behaviour change (Fudge and Peters, 2011; Monbiot, 2015; Pattie and Johnston, 2011).

2.6 CONCLUSION

Figure 2.6 below shows the different forms that re-use of materials has taken since the early nineteenth century. The figure demonstrates the waste management cycle, highlighting changes in the waste hierarchy, the sectors involved (households and business), and approaches to climate change (the 'science first' and 'human action' models). It has also been published as Tavri (2019b).

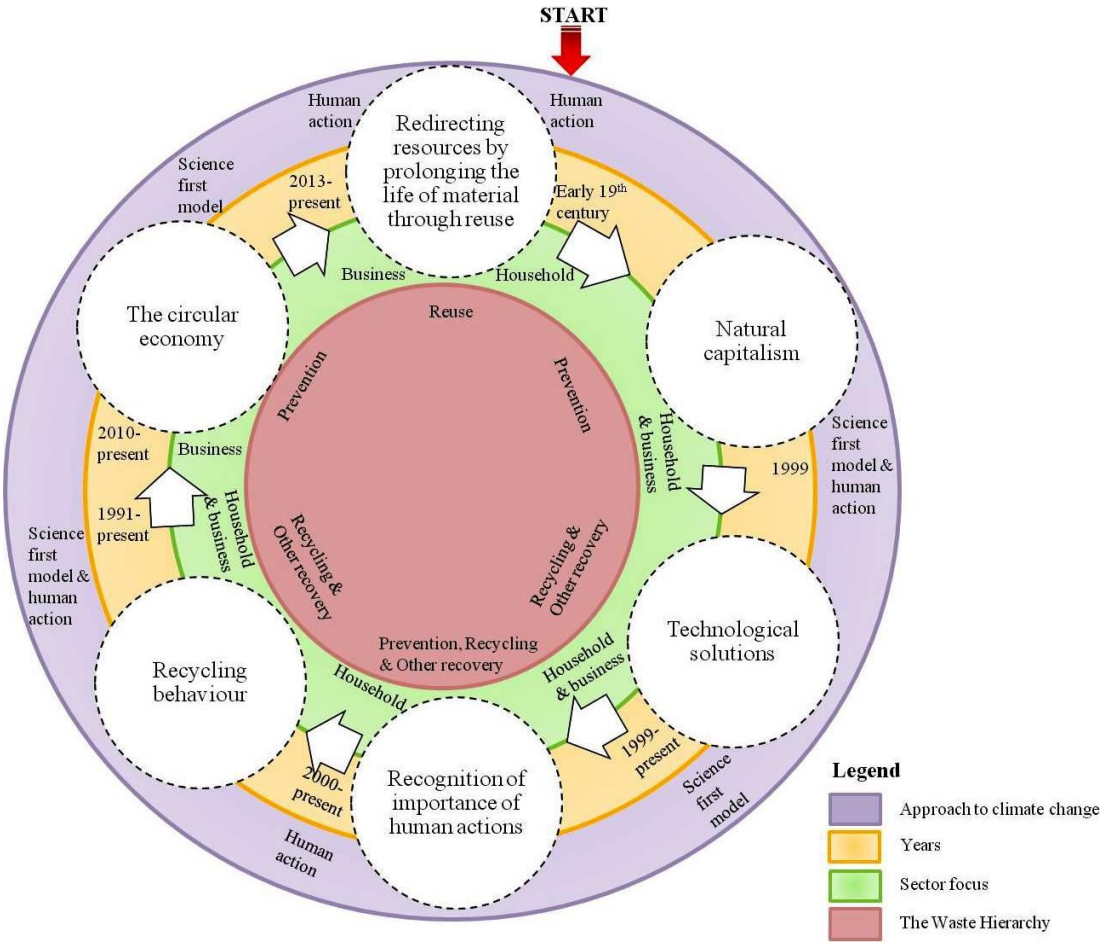


Figure 2.6: The waste management cycle (Tavri, 2019b)

The diagram starts in the early nineteenth century when work on the early stages of waste management began. At this point, re-use of materials – one of the 'human action' environmental solutions – was part and parcel of the household sector. Industrialisation and urban expansion led to greatly increased consumption and waste production. Thereafter, natural capitalism presented itself as a solution aimed at balancing the minimisation of waste and consumption, while maintaining economic development. Later, industrialisation and rapid urban expansion saw the growth of several technological advances in waste reduction, with a shift from the landfill to recycling and recovery as technological solutions.

It was not until the twenty-first century that the limitations of the 'science first' model became apparent: specifically, an inability to balance the minimisation of waste and consumption with continued economic development. This eventually led to an emphasis on 'human action' as another possible solution to the environmental issues.

In 2010, the circular economy emerged as a concept for organisations. However, at present, circular economy solutions for balancing the reduction of environmental degradation with sustained economic returns are primarily represented through the 'science first' model and technological solutions. Such approaches are identified as weak

sustainable, and thus, can at best contribute to achieving relative decoupling of economic growth from environmental degradation.

Overall, the literature review identifies two substantial limitations of the current dominant waste management techniques for overcoming the environmental issues that are in line with the purpose of this research. Firstly, recent waste figures show a continued rise in consumption and organisational waste production, which indicates the need to focus on the corporate level. Secondly, the arguments of waste management and sustainability studies indicate the dominance of technological environmental solutions, that can only hope to achieve relative decoupling, a weak sustainable option. Therefore, there is a need to adopt the 'human action' model or human-based environmental solutions, which can theoretically offer strong sustainable options and contribute to achieving the necessary goal of absolute decoupling.

This chapter has shown that among waste management techniques, re-use of materials is the only activity which is purely facilitated by 'human action'. Therefore, this thesis considers the need to focus on this 'human action' environmental solution, with the aim of exploring ways in which this might deliver strong and sustained economic and environmental growth. Finally, recognising the lack of studies on re-use of materials at the organisational level, the research aim becomes more sharply and specifically focused on suggesting a solution that can contribute to the field of waste management and sustainability.

This chapter concludes by illustrating the complexity and heterogeneous (potentially contradictory) nature of the aim of this research, since there is a tension between the focus on the re-use of materials and the nature of corporations. While the government wishes to support business growth, any success in promoting the re-use of materials will decrease consumption (DEFRA, 2011a). Re-use, therefore, may be at odds with corporate ambitions to create long-term profit by stimulating consumption, and also with those organisations whose business model is built around technological waste management solutions. Therefore, a key task is to identify solutions to this current disincentive, as corporations have enormous power to influence government and shape legislation, and can also subtly affect household behaviour (Urry, 2010). Any strategies to instigate lasting and effective change must take this complexity into account. In doing so, this thesis explores the perceptions of re-use among vanguard corporations. Part of the investigation involves understanding whether putting a monetary value on re-use encourages them to adopt re-use behaviour in the long-term.

Given this focus on re-use behaviour, the next chapter provides an extensive review of selected pro-environmental behaviour literature. A theoretical framework is then developed on the basis of this, which is used as a tool in the empirical work.

3. CHAPTER THREE: A PRO-ENVIRONMENTAL FRAMEWORK

3.1 INTRODUCTION

Chapter 2 reviewed the literature on technological and human-based environmental solutions, establishing that the latter may be able to decrease consumption and waste production while maintaining economic returns. The chapter further identified re-use as the only human-based environmental solution among existing waste management techniques, and showed that it remains an underexplored area, particularly among organisations in the UK.

A review of the literature on the re-use of materials established that it can be considered as an environmental asset that could help organisations in transitioning to a new set of values and behaviours supporting sustainable lifestyles, thus making re-use one of the pro-environmental behaviours. This chapter goes on to explore how pro-environmental behaviour is developed, and how it can be maintained. The chapter is divided into six sections, as illustrated in Figure 3.1.

This opening section introduces and provides an outline of the chapter. The second section reviews some of the key behaviour change studies at the organisational and the household levels, identifying the importance of the salient environment for facilitating change. Thus, with a focus on this research investigation, the chapter narrows down to pro-environmental behaviour studies.

The third section reviews four key pro-environmental frameworks that are identified as being applied in both organisational and individual behaviour investigations. Through analysis of these frameworks, the value action gap is identified as a common barrier in establishing the changed behaviour as a habit or norm. None of these frameworks provides mechanisms to overcome this barrier. Therefore, this thesis goes on to establish a pro-environmental framework that is derived from these key frameworks and, additionally, provides factors that resolve the value action gap.

Section 4 discusses the snowballing and inductive approaches as appropriate methods for, respectively, the selection of the studies, and the development of the pro-environmental framework.

The pro-environmental framework is developed in the fifth section by reviewing and analysing the selected studies. The selected studies are identified as being applied in both organisational and individual behaviour investigations. The developed framework is called the CEBA (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap) framework.

The final section summarises this chapter by presenting CEBA in a schematic diagram. This framework serves as an analytical tool for investigating the aim of this research. This framework has formed part of an academic publication (Tavri, 2019a).

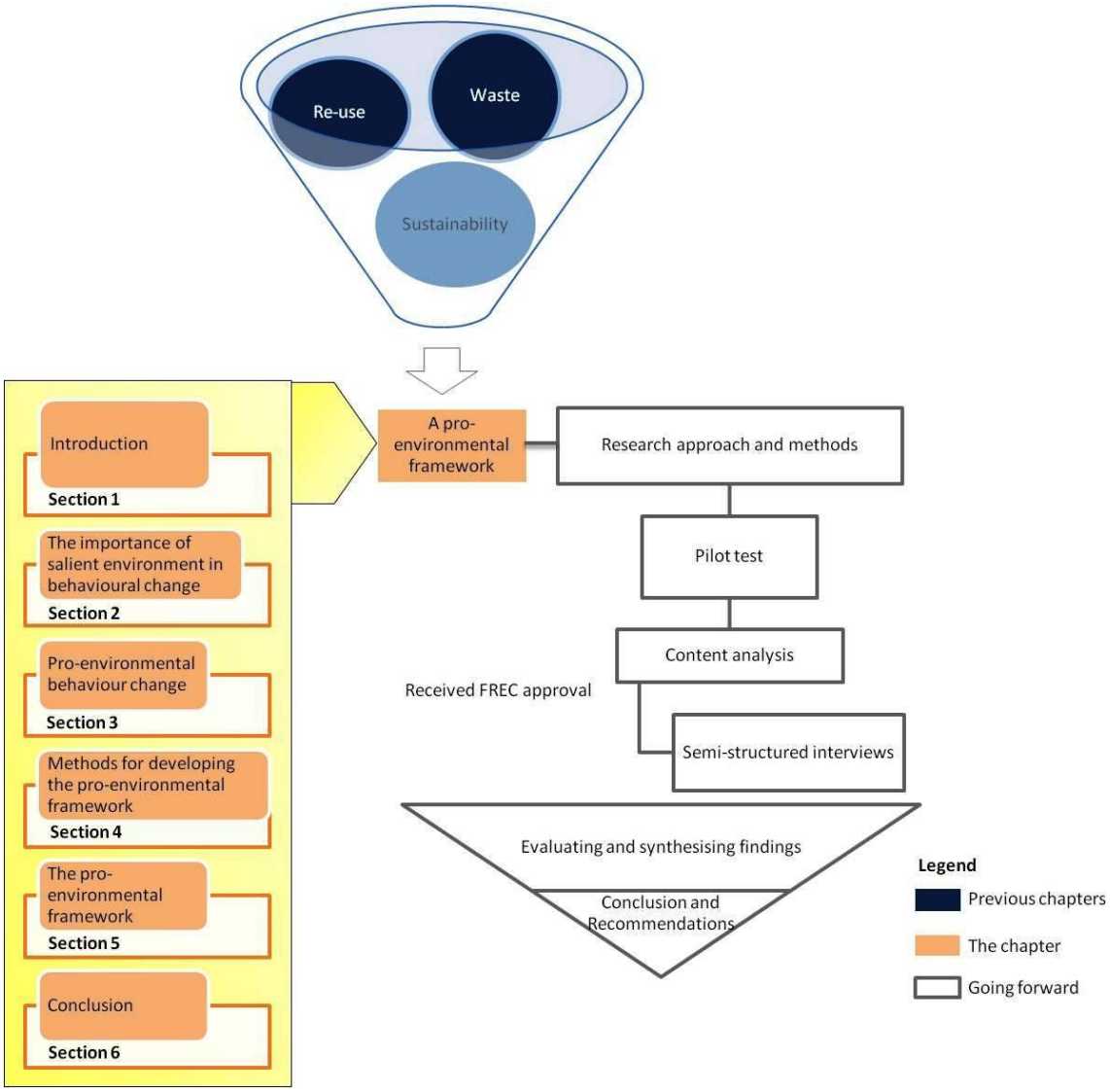


Figure 3.1: The pro-environmental framework chapter

3.2 THE IMPORTANCE OF THE SALIENT ENVIRONMENT IN BEHAVIOURAL CHANGE

This section reviews some of the key organisational behaviour studies and recycling behaviour studies. Organisational behaviour studies reflect the focus of this research

investigation, which is on organisations. Recycling behaviour studies are part of broader research in the field of waste management.

Review of the recycling behaviour studies indicated that the most pertinent work in this area is focused on the household-level. These were nevertheless considered to be of value to the present study insofar as they explore the factors involved in pro-environmental behaviour change. By synthesising these organisational and household studies, the section identifies the importance of the 'salient environment'[21] in behaviour change.

Key organisational behaviour studies include Drucker (1999, 2001) and Porter and Lawler (1968). In their model, Porter and Lawler (1968) identify motivation, ability, and salient environment as major influences on performance and behaviour. They elaborate that motivation entails the desire to achieve a goal, ability consists of the knowledge and skills necessary for attaining the goal, and salient environment refers to the availability of resources and access to support.

Drucker (1999, 2001) indicates that to change organisational behaviour, leaders require the necessary policies and practices. He also emphasises that as a motivation for enforcing these, leaders must be willing to make these changes within their organisations.

Significantly, these factors facilitating behaviour change are also referred to in the key recycling behaviour studies at the household-level. In a 1991 study of household recycling behaviour, Oskamp *et al.* conducted telephone interviews with 221 randomly selected adults in a suburban city. They found that residents with intrinsic motivation or willingness to conserve natural resources were also motivated to engage in recycling behaviour.

The association between, on the one hand, positive attitudes and intrinsic motivation towards environmental values and, on the other, higher levels of recycling behaviour is also found in a study by Barr *et al.* (2001). The study involved an investigation of residents' attitudes towards household waste management systems in Exeter, and yielded 673 usable responses. It applied a self-developed framework to assess environmental values, situational variables, and psychological variables, and found salient environment to be an important factor in facilitating recycling behaviour.

In a follow-up study, Barr (2007) examined three waste management behaviours, waste reduction, re-use, and recycling. He found that, unlike reduction and re-use, recycling was

[21] The term 'salient' refers to anything (person, behaviour, trait, etc.) that is prominent, conspicuous, or otherwise noticeable compared with its surroundings (Taylor and Fiske, 1978).

characterised by the residents as highly normative behaviour, with recycling services easily accessible to residents being an enabling factor.

These household-level behaviour studies concur with the work of Drucker (1999, 2001) and Porter and Lawler (1968) in finding that salient environment plays a key role in motivating and facilitating willingness and desire to change.

Ability is mentioned by Porter and Lawler (1968) as one of the several necessary attributes to attain a goal or establish a salient environment. This is borne out by Robinson and Read (2005) in their study investigating recycling behaviour in two London boroughs, involving two large-scale household surveys. The first, performed in 2000, covered 7,500 households, and the second, in 2004, covered 3,250 households. The findings identified ability as a key factor facilitating recycling behaviour at the household-level. According to Porter and Lawler (1968), ability is comprised of knowledge and skills, which Robinson and Read (2005) argue can be attained through education and awareness campaigns in order to raise levels of recycling among households.

Bekin *et al*. (2007) identify peer pressure and enforcement as other ways of attaining a goal. Their study of waste reduction notes that in 2007, Friends of the Earth (FoE) were lobbying the government to give councils the power to charge householders for increased waste production, or reward them for being pro-active recyclers. They concluded that waste could be reduced by making recycling a civic duty. This, as indicated by Drucker (1999, 2001), is achieved by integrating the necessary policies and practices.

It is also important to recognise the complexity of behaviour change. A study by Meneses and Palacio (2005) notes that promoting recycling behaviour, like any other behaviour change, is a very complex activity that requires analysis of many aspects of life, including its social, cultural, and financial dimensions. They examined the socio-demographic and psychographic profile of the distribution of recycling tasks and roles among 358 randomly selected individuals, finding that 'recycling behaviour is multidimensional and comprises the undertaking of different roles with different causal characteristics' (Meneses and Palacio, 2005, p.854). The study specified such roles as influencer, initiator, decision maker, vendor, persuader, enforcer, and rejecter, but stressed that, depending on the context, other roles are involved in facilitating recycling behaviour at both household and organisational levels.

While the studies on recycling behaviour discussed above focus exclusively at the household-level, they have identified common factors that also facilitate behaviour at the organisational level. These common factors are motivation, salient environment,

availability of resources, knowledge and skills, peer pressure and enforcement. In particular, the salient environment can be argued to be a key factor that aids in fostering motivation for a particular type of behaviour, as is evidenced in the studies below (Section 3.5.2.1).

Therefore, in keeping with the focus of the research on the re-use of materials – a pro-environmental behaviour – this thesis narrows down to pro-environmental behaviour studies.

3.3 PRO-ENVIRONMENTAL BEHAVIOUR CHANGE

This research uses Kollmuss and Agyeman's definition of pro-environmental behaviour as 'behaviour that consciously seeks to minimize the negative impact of one's action on the natural and built world (e.g. minimize resource and energy consumption, use of non-toxic substances, reduce waste production)' (2002, p.240).

In their study on environmental psychology, Bell, Greene and Fisher argue that 'many seem to think that solving our environmental problems requires only the right technologies. In contrast, relatively less attention has focused on strategies for preserving the environment that involves changes in people's behaviour' (2001, p.469).

Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap are the four identified primary dimensions that will aid in investigating the mechanisms facilitating and maintaining re-use behaviour at the organisational level. This will enable the assessment of whether re-use is considered a behavioural norm.

Rimal and Real define behavioural norms as 'codes of conduct that either prescribe or proscribe behaviours that members of a group can enact' (2003, p.185). They also regard them as social norms, which therefore cannot exist without communication between group members. Furthermore, they divide social norms into descriptive and injunctive categories. Descriptive norms are defined as what people do (Cialdini *et al.*, 1990). Thogersen (2006) describes descriptive norms as consisting of perceptions of normal behaviour. In contrast, injunctive norms are defined by Cialdini *et al.* as 'rules or beliefs as to what constitutes morally approved and disapproved conduct'. Essentially, 'injunctive norms specify what *ought* to be done' (Cialdini *et al.*, 1990, p.1015).

Thogersen (2006) indicates that people largely view descriptive norms as 'normal' behaviour: they tend to imitate the behaviour of others, because this offers useful information about an adaptive behaviour. This is further demonstrated by Kallgren *et al.*

(2000) in their study of normative conduct. They carried out an experiment on 149 visitors to an urban public hospital. The study showed that participants who were provided with information about the anti-littering norm were less likely to violate the norm, especially when they were made aware of the potential impact of a substantial violation. Nonetheless, providing facts alone can sometimes have a 'boomerang effect', in which people adopt the opposite behaviour to that intended. Schultz *et al.* (2007) suggest that this effect could be avoided by using injunctive norms.

The combined effect of descriptive and injunctive norms is explored by Cialdini *et al.* (2006) while examining the implications of messages in an environmental context. The experiment, which was carried out for five consecutive weekends, observed 2,655 visitors to Arizona's Petrified Forest National Park. Negative language focussing on theft from the park as a violation of behavioural norms was found to be less effective than pictorial representations of a potential negative impact of such theft. Thus, the study concluded that in such situations, instead of providing facts, an injunctive message emphasising moral approval or disapproval through the use of images is more effective in influencing people not to violate the norm.

A similar study was conducted by Cialdini in 2003, on normative messages to protect the environment. It concluded that descriptive and injunctive norms must complement each other and guide individuals towards the same conclusion. Cialdini explained this by stating that 'such a line of attack unites the power of two independent sources of normative motivation and can provide a highly successful approach to social influence' (2003, pp.108–9).

To investigate the constructive, destructive, and reconstructive powers of social norms, Schultz *et al.* (2007) conducted a field experiment on 290 households in San Marcos, California. The study used normative messages to promote household energy conservation. The results indicate that when aligned together, descriptive and injunctive norms produced a larger behavioural change than when either was presented in isolation. According to the study, 'in situations in which descriptive normative information may normally produce an undesirable boomerang effect, it is possible that adding an injunctive message indicating that the desired behaviour is approved may prevent that effect' (Schultz *et al.*, 2007, p.430).

Thus far, it has been established that the combination of both descriptive and injunctive norms in messaging is an important factor in facilitating behaviour change. Nevertheless, four key frameworks/models develop a common argument that, in instances where

communicating information is insufficient for triggering and maintaining changes in behaviour, other strategies are needed. These four frameworks/models are the 'theory of planned behaviour' framework of Ajzen and Fishbein (1980), a model of pro-environmental behaviour by Kollmuss and Agyeman (2002), a conceptual model for recycling behaviour change by Valle *et al.* (2005), and Stern's (2000) value-belief-norm model.

3.3.1 Key Pro-environmental Frameworks/Models

Ajzen and Fishbein's (1980) theory of planned behaviour (TPB) is cited by Cox *et al.* (2010) in their study of household waste prevention as a widely used framework for influencing household behaviour towards reduced consumption and waste production. TPB seeks to modify behaviour on the basis of three categories: attitudes towards the behaviour, perception of social norms, and perception of behavioural control (Cordano and Frieze, 2000; Fielding *et al.*, 2008; Groot and Steg, 2007; Vining and Ebreo, 2002).

TPB enables the understanding of attitudes, which facilitates the analysis of behavioural relationships, thereby making it possible to discern differences between behaviour and occurrences. TPB also helps in separating personal actions and extraneous categories. Among the key factors that enable this are the context, the magnitude of the behaviour, normative components, salient beliefs, and subjective norms.

Tonglet *et al.* (2004) used the TPB framework in a three stage study lasting five months in 2003. The investigation involved an initial observational study measuring recycling behaviour among 258 residents of Brixworth, UK. Then, 20 randomly selected Brixworth residents who participated in the kerbside recycling scheme were interviewed. Finally, postal questionnaires were designed from the information gained through interviews, and 258 valid responses were obtained. The study concluded that the strategies and messages required for facilitating waste minimisation and re-use differ from those for facilitating recycling behaviour. The former was found to be influenced by a concern for the environment and the community, and for the latter pro-recycling attitude is the major contributor. Nonetheless, both behaviours were likely to be inhibited by perceptions of inconvenience and lack of time and knowledge.

Tonglet *et al.* (2004) describe TPB as a cognitive framework that helps to identify and explain the factors underpinning recycling behaviour at the household-level. However, other studies indicate that despite its success, TPB has limitations in terms of transforming a social norm into an actual behaviour. In 2000, Cordano and Frieze used the TPB

framework to influence environmental managers in developing strategies for reducing pollution. The results showed that despite environmental managers reporting an intention to reduce pollution, the intention did not result in actual behaviour. This is because the framework failed to provide an economic incentive for organisations to reduce pollution.

Groot and Steg (2007) tested the TPB framework with a questionnaire about people's intention to use a park-and-ride facility. The study sampled 218 respondents who regularly visited the centre of Groningen for work or shopping. It found a disparity between people's stated intention to use the park-and-ride facility and their actual behaviour. The result indicates that intention is not necessarily sufficient to change behaviour, particularly when it is measured in the form of surveys, where people can easily overstate their intention.

The above cited studies indicate that intention towards the desired behaviour constitutes an attitude change. However, various practical constraints prevent attitude change from transforming into actual behaviour change. Indeed, Ajzen, the author himself writes that:

> the theory of planned behaviour traces attitudes, subjective norms, and perceived behavioural control to an underlying foundation of beliefs about the behaviour. Although there is plenty of evidence for significant relations between behavioural beliefs and attitudes toward the behaviour, between normative beliefs and subjective norms, and between control beliefs and perceptions of behavioural control, the exact form of these relations is still uncertain. (1991, p.206)

He goes on to acknowledge that TPB is insufficient for representing the complexity of attitude–behaviour relationships.

The gap between positive attitude and actual behaviour as a result of that attitude is also apparent in the study by Kollmuss and Agyeman (2002). They conducted an analysis of some of the most influential analytical frameworks, which are early US linear models, the theory of reasoned action by Ajzen and Fishbein (1980), models of predictors of environmental behaviour by Hines *et al.* (1986), the model of ecological behaviour by Fietkau and Kessel (1981), and the low-cost/high-cost model of pro-environmental behaviour by Diekmann and Preisendoerfer (1992). Kollmuss and Agyeman (2002) show that the models establish that demographic, internal, and external factors play an important role in influencing pro-environmental behaviour.

Kollmuss and Agyeman (2002) developed their 'model of pro-environmental behaviour' with influences from the model of ecological behaviour (Fietkau and Kessel, 1981).

However, as they point out, unlike the model of ecological behaviour, theirs does not relate directly to environmental knowledge. In their model, responsible pro-environmental behaviour is associated with knowledge, attitudes and values, and emotional involvement. Together, these make up to a complex that they refer to as 'pro-environmental consciousness'. This complex is 'embedded in broader personal values and shaped by personality traits and other internal as well as external factors' (2002, p.256). Among the external factors thus considered are social and cultural factors ('even though', as the authors point out, 'it might be argued that social and cultural factors could be seen as a separate category which overlaps with internal and external factors' (2002, p.256)).

Nonetheless, Kollmuss and Agyeman (2002) identified some critical factors that they did not investigate in their study. These are willingness and desire to change, the influence of habits, and the influence of personality traits and character. They conclude that there exists a gap between willingness to change and change in actual behaviour.

The value action gap is recognised as a common barrier among the studies that used the TPB framework (Ajzen and Fishbein, 1980) and the Kollmuss and Agyeman (2002) pro-environmental behaviour framework. Nevertheless, those studies suggest that having awareness and knowledge, willingness to change, and the availability of resources (time, money, and commitment) are among the key factors that, when applied together in real-life situations, can play a part in facilitating pro-environmental behaviour change.

The third key pro-environmental framework identified in this research is the conceptual model for recycling behaviour change at the household-level developed by Valle *et al.* (2005). The model indicates subjective norms, knowledge and awareness, and the availability of resources as important factors for changing behaviour among individuals or groups. Valle *et al.* define subjective norms as social pressures that 'originate from family members (internal referents) or from individuals or groups outside the family, such as friends, neighbours, or social groups (external referents)' (2005, p.380). However, it is important to recognise that social pressure influence at the organisational level operates within a very different context to that at the household-level. This is clearly identified by Lachman *et al.* (1994) in their study of organisational behaviour. They observe that at the organisational level, social pressure and constraints depend on the surrounding social, political, and legal systems, and the availability of resources and technology. The study identifies that peer pressure and regulatory measures are additional factors that drive organisational behaviours.

Perceived behaviour, knowledge, awareness, availability of resources, peer pressure, and regulatory measures are identified by Stern (2000) in his value-belief-norm model as essential factors for inducing pro-environmental behaviour change. According to him, there are four interconnected categories that enable pro-environmental behaviour change. Firstly, attitudinal factors involving norms, beliefs, values, and the cost-benefit ratio associated with change. Secondly, external and contextual forces, such as interpersonal influences, community expectations, government regulation, monetary incentives, and costs and technology. The third category is the knowledge and skills necessary for acting on the changed behaviour, and the final category is transforming the changed behaviour into a habit, thereby creating a norm.

However, frameworks do not provide strategies for avoiding the value action gap, which, as discussed above, is a barrier to transforming intentions or attitudes into habits or normative behaviours. Furthermore, it is important to recall Meneses and Palacio's (2005) observation that applying behaviour change factors to real-life situations is a complex matter. Kollmuss and Agyeman (2002) further emphasise this complexity by indicating that, in reality, humans are not entirely rational beings and thus do not make systematic use of the information provided. They further point out that there are individual, social, cultural, and economic constraints that can become barriers to instigating pro-environmental behaviour changes. Nonetheless, this research indicates that the investigation of organisations representing a salient environment – of being in the vanguard of moving up the waste hierarchy – could help reduce the impact of such barriers. This is elaborated in Chapter 4.

3.4 METHODS FOR DEVELOPING THE PRO-ENVIRONMENTAL FRAMEWORK

This thesis presents a pro-environmental framework demonstrating the categories and variables that are used as an analytical tool for investigating re-use behaviour at the organisational level in the UK. In doing so, the pro-environmental framework is derived from the key frameworks by considering both the factors and barriers to behaviour change (Section 3.5).

To develop the framework, 75 pieces of pro-environmental behaviour literature were reviewed, consisting of 40 empirical studies and 35 theoretical studies. These studies are coherent, as they were selected via snowball sampling. The studies also present the effect of people's behaviour at both the individual and organisational levels. In this way, snowball sampling presents the advantage of minimised bias by a selection of studies that

are consistent with each other, regardless of whether they are focused on the individual or organisational level.

3.4.1 Snowball Sampling

Lecy and Beatty (2012) present a method of structured literature review in which selection of studies through snowball sampling ensures that the sample contains key publications in the field. They claim that this method serves 'to correct potential bias in unstructured literature reviews and to provide a way to create a parsimonious representation of the most salient research in a field' (Lecy and Beatty, 2012, p.13). Using this method, construction of the sample is based on a selection of 'seed articles' (Lecy and Beatty, 2012). The seed articles selected were the following pro-environmental behaviour studies, reviewed in Section 3.3 above: Ajzen and Fishbein (1980); Campbell (2007); Cialdini *et al.* (2006); Cox *et al.* (2010); Fielding *et al.* (2008); Groot and Steg (2007); Kallgren *et al.* (2000); Rimal and Real (2003); Robinson and Read (2005); Thogersen (2006); Valle *et al.* (2005).

From these 11 seed articles, another 64 studies were selected. First, 41 studies citing the seed studies were selected. Then, a further 23 studies that cited the studies citing the seed articles were selected.

Lecy and Beatty state that an advantage of selection of studies through snowball sampling is that 'it adds value by minimising the possible biases associated with cognitive mapping and enables testing hypotheses about actual citation patterns within a given research domain' (2012, p.2). However, they acknowledge that this technique is limited to the 'citation patterns and provides little insight into the theoretical content of the selected studies' (2012, p.2).

Adopting snowball sampling enables selection of studies or theories that are consistent. According to Marsh and Stoker (1995), this can contribute to a firm framework that is formed by the selection of studies with relevant empirical evidence, and not solely grounded in observed cases that provide 'anecdotal' theoretical claims.

Mills and Briks (2014) state, in their book on qualitative methods, that a good theory is postulated to be grounded in data, with theoretical sensitivity as an essential component of the procedure. They define 'theoretical sensitivity' as 'the ability to recognise, and extract from the data, elements that have relevance for your emerging theory' (Mills and Briks, 2014, p.112).

Gersick (1988) used grounded theory in his study on evaluation of teams' progress towards a given desired behaviour. He states that a grounded theory can relate well to daily practice by remaining current with organisational realities while bringing a fresh perspective to established theoretical frameworks.

Locke (2001) notes that the grounded theory domain focuses on issues associated with individual and group behaviour. In addition, Mills and Briks (2014) argue that building a grounded theory is a rigorous procedure, whereby a researcher constructs the analysis of data and produces both themes and categories.

The inductive approach is identified as one of the key ways of carrying out a grounded theory method (Glaser and Strauss, 1967). According to Marsh and Stocker (1995), the inductive approach is a commonly used process in the search for patterns, which, like any other approach, provides a conclusion based on systematic analysis of the empirical works.

Locke (2001) argues that the inductive approach brings fresh perspectives and new theories, enlivening and modifying existing theoretical frameworks. The inductive approach was therefore considered to be the most appropriate approach for developing the pro-environmental framework in the current study.

3.4.2 The Inductive Approach

The inductive approach is an integral part of grounded theory. It involves establishing upper-level, lower-level and main groups, which constitute the whole framework through coding and grouping textual materials (Elo and Kyngas, 2007; Locke, 2001; Mayring, 2000; Thomas, 2003).

In his work on the general inductive approach for analysing qualitative data, Thomas (2003) used raw textual data to form links in order to derive findings. According to him, the first step is extracting the core meaning of the text that is relevant to the research objective. In an inductive approach, this is forming 'upper-level groups'. Secondly, the extracted textual information is divided into themes or categories, which are known as 'lower-level groups'. Finally, the produced themes or categories are further analysed to develop the 'main groups'.

Following Thomas's (2003) approach, the selected pro-environmental behaviour studies were grouped together and collated using Microsoft Excel. Table 9.2 (see Appendix I, Section 9.1.4) provides examples of the selected studies, and the ways in which they were

separated out for the purpose of analysis. They are divided into study type, location, participants, size, situation, method, findings, and conclusion.

The ‘upper-level groups’ were formed through an initial review of the selected pro-environmental behaviour studies. This involved selecting as many terms as seemed relevant for the establishment of the framework. Table 3.1 below shows the terms that were identified based on frequency with which the terms and their synonyms appeared in similar contexts during the initial review. After that, the ‘lower-level groups’ and the ‘main groups’ were formed.

Table 3.1: Upper-level groups derived from an initial review of pro-environmental behaviour studies

Situational norm	Informational social influence	Self-awareness
Persuasion	Resource and technology	Regulation and policy
Value action gap	Government system	Sustainable
Ethical behaviour	Ethical responsibility	Social norm
Misperception	Boomerang effect	Identity relevance
Subjective norm	Automatic social perception	Stereotypes
Personality traits	Associative strength	Attitude change

The ‘lower-level groups’ are here referred to as ‘variables’, and the ‘main groups’ are called ‘categories’. These variables and categories were formed according to my perception and analysis of the studies. Such an approach is susceptible to bias. Nevertheless, the combination of snowball sampling and the inductive approach can be considered to help ensure the selection of coherent studies and bring a fresh perspective by enlivening and modifying existing pro-environmental behaviour studies (Locke, 2001; Lecy and Beatty, 2012; Marsh and Stoker, 1995). This thesis considers this combination to be a means of overcoming bias. Despite these endeavours, some bias may remain, due to my interpretation.

3.5 THE PRO-ENVIRONMENTAL FRAMEWORK

The categories in the pro-environmental framework are Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap, or CEBA for short. The following sections explain the formation of variables and categories through review and analysis of the selected pro-environmental studies.

3.5.1 Communication (C)

This section explores the selected studies that indicate ‘communication’ as an important factor for facilitating behaviour change. In so doing, the section forms ‘lower-level groups’ or ‘variables’ by analysing and drawing out the themes from the selected studies.

The formation of variables within this category draws directly on Kelman's (1958) study on the types of communication, in which he reports the experiment carried out from a broader theoretical framework that analysed different processes of attitude change resulting from social influence. In his study, Kelman distinguishes high power communication, which can contribute to lasting change in individuals' attitudes and beliefs, from low power communication, which leads only to superficial and short-lived changes.

Since this research aims to evaluate re-use behaviour longevity, only high power communication has been used. The variables corresponding to this are high means control, high attractiveness, and high credibility. The continuing relevance of this sixty-year-old study (Kelman, 1958) is validated by presenting the compatibility of Kelman's notion of high power communication with findings from the relatively recent individual and organisational behaviour studies presented in Table 3.2 below.

Table 3.2: Studies featuring communication as a crucial category

Individual studies	**Organisational studies**
Cialdini (2003)	Cashore and Vestinsky (2000)
Gockeritz *et al.* (2010)	Cleek and Leonard (1998)
Lindenberg and Steg (2007)	Kagan *et al.* (2003)
Mannetti *et al.* (2004)	Kong *et al.* (2002)
Rimal and Real (2003)	Loe *et al.* (2000)
Schultz *et al.* (2007)	Manaktola and Jauhari (2007)
Stern (2000)	Mohr *et al.* (2001)
Thaler and Sunstein (2009)	Stern (2000)
Thogersen (2007)	Thaler and Sunstein (2009)
Thomas *et al.* (2004)	-
Valle *et al.* (2005)	-
Wenzel (2005)	-

The section below discusses the studies featuring the first variable under the Communication category, namely, high means control.

3.5.1.1 The First Variable (High Means Control)

In his study, Kelman (1958) represented influence through mandatory rules and regulations as 'high means control'. He equates 'high means control' with compliance, writing that:

> compliance can be said to occur when an individual accepts influence because he hopes to achieve a favorable reaction from another person or group. He adopts the induced behaviour, not because he believes in its content, but because he expects to gain specific rewards or approval and avoid specific punishments or

> disapproval by conforming. Thus the satisfaction derived from compliance is due to the social effect of accepting influence. (1958, p.53)

Cleek and Leonard (1998) conducted fieldwork on 150 graduate and undergraduate students, asking them to assume that they were a manager for a medium sized manufacturing company. The investigation was intended to identify the influence of the code of ethics on the managers' behaviour in several ethical situations. The study concluded that codes are seen as just one way of communicating organisational culture, but that they do not affect ethical decision making as codes do not specify any innovative ideas to improve ethical behaviour.

In contrast, the research by Loe *et al.* (2000) on assessing ethical decision making in business concludes that codes of ethics influence decision making by increasing awareness among individuals in the business. Nonetheless, they concluded that alongside communication, other factors such as peer pressure, the role of gender and social factors play an important role in encouraging co-workers to engage in ethical behaviour.

In their study on framing responsibility for the strategic leadership of ethical behaviour in businesses, Thomas *et al.* (2004) indicate that the initiative for ethical change needs to originate from the leaders within the organisation. Workers' ethical behaviour can be enforced through such means as passing on the cost of ethical failure via fines, penalties, legal investigations, and emphasising potential threats of unethical behaviour to the reputation of the business.

The importance of enforcement for maintaining organisations' reputations, through governance systems, regulation, and environmental policy, is also emphasised by Cashore and Vestinsky (2000) in their study of the influencing of corporate behaviour. Considering three forestry organisations in British Columbia, Alberta, and Alabama, they concluded that 'firms try to accommodate state officials' interests when they know decisions may be taken that could affect firms' operations' (2000, p.10).

Enforcement through government regulations is identified as a measure that can facilitate pro-environmental behaviour change in one of the key pro-environmental frameworks discussed above (Stern, 2000; Section 3.3.1).

Thus far, this section has illustrated that one way of facilitating pro-environmental behaviour change is by establishing compliance. Within the waste and resource management sector, duty of care is one of the legislative regimes established in the UK under the Environmental Protection Act 1990, followed by waste directive (Section

1.2.2). Duty of care and the waste directive form part of the UK waste strategy for moving up the waste hierarchy and achieving zero waste to landfill. Therefore, in this research, the empirical study used the terms 'waste hierarchy' and 'zero waste to landfill' as the elements to measure compliance among organisations.

The above studies demonstrate how decisions made by individuals have an effect at the organisational level. For instance, Cleek and Leonard (1998) present the effect of managers on organisations' code of ethics. Similarly, Thomas *et al.* (2004) shows the effect of leaders on ethical changes in the organisation. Also, Cashore and Vestinsky (2000) demonstrate the effect of state officials on organisational compliance measures. Such an interweaving of the individual and the organisational levels is also evident in the empirical study, which shows the effect of staff on organisations leading to the development of compliance measures (Section 6.2.1).

The following section examines the studies featuring the second variable within the Communication category, high attractiveness.

3.5.1.2 The Second Variable (High Attractiveness)

Kelman (1958) defines 'high attractiveness' as an individual's identification with a group, and says that:

> identification can be said to occur when an individual accepts influence because he wants to establish or maintain a satisfying self-defining relationship to another person or a group. This relationship may take the form of classical identification, in which the individual takes over the role of the other, or it may take the form of a reciprocal role relationship. The individual actually believes in the responses which he adopts through identification, but their specific content is more or less irrelevant. He adopts the induced behavior because it is associated with the desired relationship. Thus the satisfaction derived from identification is due to the act of conforming as such. (1958, p.53)

The studies discussed below present the arguments behind the concept of 'high attractiveness', another variable within the Communication category, which means facilitating change through identification with an individual or group.

For instance, Kong *et al.* (2002) conducted a study investigating the role of NGOs in moving the business towards sustainable consumption. The study concluded that education, innovative partnership, creating demand for the supply side, and involvement

of consumers and stakeholders in decision making through feedback are essential factors for motivating individuals in the business towards positive behaviour change.

The effect of customers' feedback on companies' decision making is also demonstrated by Mohr *et al.* (2001). They investigated the impact of corporate social responsibility (CSR) on the customers' buying behaviour. They carried out in-depth semi-structured interviews of 48 individuals/customers in metropolitan areas. The study concludes that the majority of customers do not care about CSR, and that it is only very occasionally that customers base their purchasing decisions on such principles. This was despite the finding that customers reacted positively regarding CSR; however, they distinctly believe that CSR is for a company's benefit. Furthermore, one-third of the customers were unaware of the need for CSR.

Along similar lines, Manaktola and Jauhari (2007) assessed 66 consumers' attitudes towards green hotels in Delhi. The study concluded that environmentally trained employees could influence consumers to stay in the hotel.

The above examples represent the effect of individuals' attitude on organisations' decision making. Nevertheless, such an effect is not limited to organisations. Wenzel (2005) conducted a study of 64 students of an Australian university, finding that respondents believed that taxpayers should be more honest in their tax affairs than they believed people were under the current system. At the same time, Wenzel also carried out a similar study at the household-level investigating the perceptions of 1,500 Australians regarding the payment of taxes.

In both scenarios, the participants were provided with feedback about the actual number of taxpayers that exceeded the participants' expectations. This feedback changed the participants' perceptions about taxpayers: before the feedback, participants believed that taxpayers are not honest in their tax affairs; however, feedback about the actual number changed their perception, thus leading to mass persuasion that taxpayers are honest in their tax affairs. This thesis notes that such intervention through feedback could be considered to enable development of identification via obtaining 'a satisfying self-defining relationship to another person or a group' (Kelman, 1958, p.53).

Along similar lines, Thaler and Sunstein's (2009) study on the way people can be 'nudged' toward positive actions found that one way in which a shift in behaviour can be achieved is simply by informing people about the performance of others. Thaler and Sunstein claim that 'sometimes the practices of others are surprising, and hence people are much affected by learning what they are' (2009, p.71).

In his study on environmental psychology, Vlek (2000) discussed the importance of communicating feedback in preventing environmentally harmful behaviours. He explained that lack of regular feedback about environmental issues could cause ignorance and lack of attention towards environmental problems, which may lead to 'gullibility, helplessness, and apathy' (2000, p.162).

External or contextual forces, including interpersonal influences and community expectations, are also highlighted by Stern (2000) as significant factors contributing to behavioural change. This is also supported by an empirical study by Kagan *et al.* (2003) of pulp and paper manufacturers in British Columbia, Canada; Australia; New Zealand; Washington, USA; and Georgia, USA. The study found that concerns about pollution expressed by environmental groups led to a change in behaviour within organisations, since 'environmental activists can intensify economic pressures by generating adverse publicity about polluting firms and organising consumer boycotts' (2003, p.68).

Thaler and Sunstein (2009) argue that peer pressure and internal and external feedback are among the crucial factors contributing to social influence in the field of decisions about health, wealth, and happiness. They observe that 'social influences come in two basic categories. The first involves information. The second involves peer pressure' (2009, p.58). One such example is the 'Most of Us Wear Seatbelts Campaign' in Montana. Owing to the success of the campaign (through peer pressure), the use of seat belts increased significantly, thereby making it a norm (Linkenbach and Perkins, 2003).

In their study on identifying behavioural intentions of households towards recycling, Mannetti *et al.* (2004, p.234) conclude that 'identity as an antecedent of pro-environmental behaviour provides a broader perspective to persuasion campaigns'. The study surveyed 230 Italians using a questionnaire concerning opinions about household recycling behaviour. The result suggested that one of the ways in which households could be influenced towards the use of refuse collection and disposal facilities is via campaigns portraying recycling behaviour as prestigious, and anti-environmental behaviour as 'out-of-fashion'.

This thesis used the terms 'feedback' and 'comparative analysis' to analyse how organisations gather the internal and external responses to their re-use activities. The studies yet again demonstrate an association between the findings of individual and organisational studies, and underscore the way decisions made by individuals have an effect at the organisational level. For instance, Kong *et al.* (2002) present the effect of feedback from customers and stakeholders in the organisation. Similarly, Mohr *et al.*

(2001) show the effect of customers' feedback on companies' decision making; and Manaktola and Jauhari (2007) demonstrate the effect of consumers' attitudes on organisational decision making. Kagan *et al.* (2003) present the effect of peer pressure from environmental activists on the organisation. Such an interweaving of the individual and organisational levels is also evident in the semi-structured interview findings (Section 6.2.1).

The next section reviews the studies providing evidence of the third variable in the Communication category, high credibility.

3.5.1.3 The Third Variable (High Credibility)

Influence through knowledge and facts is designated 'high credibility' by Kelman (1958). He describes 'high credibility' as internalisation, noting that:

> internalization can be said to occur when an individual accepts influence because the content of the induced behavior – the ideas and actions of which it is composed – is intrinsically rewarding. He adopts the induced behavior because it is congruent with his value system. He may consider it useful for the solution of a problem or find it congenial to his needs. Behavior adopted in this fashion tends to be integrated with the individual's existing values. Thus the satisfaction derived from internalization is due to the content of the new behaviour. (1958, p.53)

As indicated in Section 3.3 above, high credibility can be acquired through descriptive and injunctive messaging, which is expanded on further below.

Schultz *et al.* (2007) conducted an experiment on 290 households in San Marcos, California, USA. The purpose of the study was to increase awareness of energy usage among households. When consumers were supplied with a descriptive normative message, giving facts about consumption, this created a rebound effect (what the authors called a 'boomerang' effect), resulting in an increase in consumption. In contrast, when the same message was supplied in an injunctive normative form, by providing a happy smiley (to those who consumed less) and sad smiley (to those who consumed more), this eliminated the rebound effect and resulted in less energy consumption. This underscores the importance of injunctive normative messaging for avoiding the rebound/boomerang effect.

Gockeritz *et al.* (2010) conducted a two-year study of 1,604 residents in California. The purpose was to assess whether normative social influence is moderated by personal involvement and injunctive normative beliefs. The results showed that facts and personal

beliefs play a significant role in influencing behaviour. The study concluded that when communicating messages to groups or individuals, the greatest impact on behaviour comes from a combination of descriptive and injunctive normative information.

In 2003, Cialdini carried out a study to assess the influence of messages providing information on individual behaviour. He observed visitors at Arizona's Petrified Forest National Park over five consecutive weekends. Around one ton of wood was stolen from the park by visitors every month. To modify attitudes to theft, an injunctive message was displayed at entrances and exits, saying 'Please don't remove the petrified wood from the Park, in order to preserve the natural state of the Petrified Forest'. This message was accompanied by 'a picture of a lone visitor stealing a piece of wood, with a red circle and bar symbol superimposed over his head' (Cialdini, 2003, p.107). The result led to a decrease in thievery. This outcome illustrates that providing knowledge in an injunctive normative message is effective in a situation characterised by socially reprehensible conduct.

These studies suggest that behaviour is more likely to change when messages are delivered in a way that positively emphasises socially acceptable behaviour, rather than focussing on what might be perceived as draconian rules and regulations. This is further indicated by Lindenberg and Steg (2007) in their study on guidance regarding environmental behaviour, which suggested that in order to motivate normative behaviour, knowledge and awareness of the impact associated with the behaviour are among the important elements to consider.

How a message is communicated can determine its success or failure in changing behaviour. For instance, in the studies discussed above, the simultaneous use of descriptive and injunctive messages helped avoid the boomerang effect. The content of the messaging was intended to harmonise the messaging with individuals' or organisations' value systems, which this thesis notes could lead to internalisation. Therefore, this thesis used the terms 'achievements', 'guidelines', and 'innovations' in assessing organisations' knowledge and facts concerning their re-use activities.

Although the variables high means control, high attractiveness and high credibility are represented separately in Figure 3.2 below, in reality there is a complex interrelationship between them. In the real-life investigation of re-use behaviour, how variables are utilised can vary depending on the type of organisations under consideration.

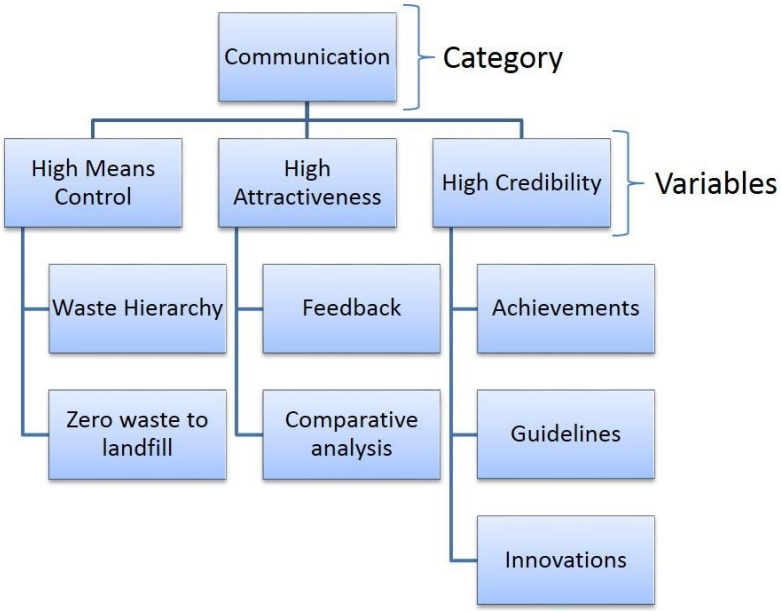


Figure 3.2: Communication variables, formed by sorting and grouping the upper-level groups

The Communication category and variables can help to facilitate behaviour change by affecting the ways in which individuals view themselves and their place within a wider group. Nevertheless, in their study of the influence of perceived norms, Rimal and Real (2003) found that communicating a norm is one thing, but creating action based on that norm is much more complex. As they put it, 'individuals may perceive high levels of prevalence and strong normative pressures and yet not engage in the behaviour' (2003, p.187), which is indeed evident in organisational studies by Mohr *et al.* (2001) and Manaktola and Jauhari (2007) (Section 3.5.1.2).

The fact that the Communication category alone is insufficient to drive sustained change indicates a gap, which Rimal and Real (2003) suggest can be filled by activating the norm: essentially *acting* on the given Communication. The next section elaborates on this.

3.5.2 Engagement/Action (E)

This section explores those pro-environmental studies that feature 'Engagement/action' as an important category in behaviour change. In doing so, the section forms 'lower-level groups' or variables by analysing and drawing out themes from the individual and organisational behaviour studies listed in Table 3.3.

Table 3.3: Studies featuring Engagement/action as a crucial category

Individual studies	**Organisational studies**
Aarts *et al.* (2003)	Campbell (2007)
Aarts and Dijksterhuis (2003)	Collier and Esteban (2007)
Bargh and Ferguson (2000)	Dewhurst and Thomas (2003)
Barr *et al.* (2001)	Goldstein *et al.* (2008)
Cialdini *et al.* (1990)	Kong *et al.* (2002)
Dijksterhuis *et al.* (2000)	Lachman *et al.* (1994)
Dijksterhuis and Bargh (2001)	Organ *et al.* (2006)
Dolan *et al.* (2012)	Organ (2007)
Goldstein *et al.* (2008)	Payne and Raiborn (2001)
Groot and Steg (2009)	Peng and Chiu (2010)
Kallgren *et.al.* (2000)	WRAP (2018j)
Kelman (1958)	Zhang (2011)
Nye and Hargreaves (2010)	-
Prendergrast *et al.* (2008)	-
Rothman (2000)	-
Steg and Vlek (2009)	-
Thogersen (2006)	-
Thogersen (2007)	-
Vermeir and Verbeke (2006)	-

The following section surveys the studies providing evidence of the first variable under Engagement/action, namely, non-economic variables.

3.5.2.1 Non-economic Variables

Cialdini *et al.* (1990) studied the impact of norms using an experiment on 139 visitors at the parking garage of a university-affiliated hospital. Visitor behaviour within both heavily littered and clean parking areas was observed for six days. Leaflets were dropped by visitors in the littered environment, but not in the clean environment. The study concluded that focus of attention and/or the salient environment were important components inclining individuals towards a given course of action.

Along similar lines, Kallgren *et al.* (2000) conducted a study on 107 psychology students at Arizona State University to examine categories that affect the relationship between norm focus and behaviour. In the university, corridors and stairs were pre-littered and varying norms were displayed; some anti-litter norms were very specifically related to the university and its environment, and some gave more general anti-littering messages. Participants were found to be less inclined to litter in a corridor displaying an anti-litter norm that was specifically related to their environment. Therefore, the results suggest that a norm has a greater impact on behaviour when it is relevant to the surrounding.

In their study of change in personal behaviour through social context, Aarts and Dijksterhuis (2003) conducted experiments with 50 undergraduate students from a Dutch university. They identified the effect on behaviour of specific images when applied in the

salient environment. The results indicated that students shown images of a library were quieter when in the library than those who were shown different pictures. The researchers concluded that an automatic effect on normative behaviour in a social environment can emerge directly from the mere activation of the norm by relevant images. A similar study also found that normative social influences cause participants to automatically think of and apply the normative behaviour according to the situation (Aarts *et al.*, 2003).

The automatic transition of a message into action in a salient environment is also found at the organisational level. This is illustrated by Dewhurst and Thomas (2003) in their study of organisations in the Yorkshire Dales National Park, UK, which involved structured and semi-structured interviews with 54 owner-managers.

The focus of the study was to encourage positive attitudes towards sustainable behaviour among businesses. It found that macro-environmental pressure for change, the dynamics of the immediate business environment, personal relationships and motivation combine to form a set of normative beliefs that can change individual behaviour within businesses.

Based on the findings from the interviews, the firms were divided into three categories on the basis of their owners' responses: unconvinced minor participants (UC), antigreen pragmatists (AP), and committed actors (CA). The result shows that UC firms believed that other businesses were more concerned with trade than the environment. In contrast, AP businesses believed that global issues are not influenced by individual behaviour and thus should not be an individual priority, but a commercial concern. This group tended to value facts and scientific experts. Finally, CA organisations believed that everyone has a personal responsibility to conserve resources and minimise environmental damage. CA organisations were identified to be businesses whose primary motivation is not economic gain.

The study found that childhood experiences and personal values shaped the attitudes expressed by the owners. Despite these attitudinal differences, the majority of respondents (61 per cent) across all three groups believed that environmentally sound business practices could result in economic gain. The study concluded that the context and the sector in which organisations work influences the attitudes and behaviour of individuals within them.

Nye and Hargreaves (2010) led a year-long study of a UK construction organisation called Burnett's, investigating the context and individual motivation of pro-environmental behaviour. Sixteen 'environmental champions' were appointed within the organisation,

who carried out audits and provided information on waste, energy emissions, and ways to improve performance. The study also used unconventional messages as a communicating tool. Appointing the environmental champions for supervision and putting up pro-environmental messages created a social context, which is credited with facilitating behavioural interventions.

The importance of social context is not limited to just organisational studies, but is also found among studies of the individual level. For instance, Thogerson's (2006) study on the norms of environmentally responsible behaviour indicates that social context forms because of a strong belief that something is the sensible thing to do; it presents a preferable alternative. Thogersen (2007) conducted another study on the activation of social norms, suggesting that individual behaviour tends to be influenced by social context. Dolan *et al.* (2012) further indicate, in their study on influencing behaviour, that it is important to focus information on an environment or a group with similar characteristics.

Steg and Vlek (2009), in their study on encouraging pro-environmental behaviour, show that the barriers to a particular behaviour change can be removed if the information provided is contextual to the environment. Along similar lines, Vermeir and Verbeke (2006) in their study on attitudes and behaviour towards sustainable food consumption carried out an experiment with 456 youngsters in Belgium. The study concluded that knowledge and mimicry of other people in a social context, in order to perform a specific behaviour, leads to the development of automatic behaviour to achieve a given goal, thereby creating a habit. Dewhurst and Thomas (2003) agree with this by showing that social context and relevant situations develop individual beliefs and values, which play an important role in the shaping of attitudes and behaviour.

These studies indicate that encouragement towards shared goals is the key to converting communication into action at both the individual and organisational levels. Specifically, when a goal is agreed on, habitual plans or actions to achieve that goal are automatically activated (Bargh and Ferguson, 2000). In this way, a collective goal can change individual attitudes and behaviour, and therefore lead to a wider transformation within the group or organisation. This demonstrates that individual and organisational behaviour patterns are connected. This point is exemplified by the '*Planet Earth II effect*', which resulted in the formation of a collective goal in the UK of reducing plastic pollution through the UK

Plastics Pact[22] (WRAP, 2018j). So far, 96 businesses from across the entire plastics value chain have signed up to this shared goal.

It is contended that activating shared goal seeking automatically elicits certain behaviours that develop associative strength (Collier and Esteban, 2007). Associative strength is a condition that is critical for enabling normative behaviours to develop and be maintained (Kong *et al*., 2002). Attaining an associative strength can also be described as building a cooperative behaviour (Collier and Esteban, 2007).

Cooperative behaviour is defined by Organ *et al.* as 'individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization' (2006, p.3). In his previous study, Organ defined associative strength as 'performance that supports the social and psychological environment in which task performance takes place' (1997, p.95).

Peng and Chiu (2010), in their study examining the underlying cooperative relationship between supervisor and employee, indicate that cooperative behaviour within an organisation aids in enhancing productivity, coordinating team members to enable effective performance towards the enhancement of resources. Furthermore, Zhang (2011) provides evidence that this type of behaviour is encouraged by feedback on performance that is not limited to economic benefits but also places value on instances where employees have gone 'the extra mile', which can lead to productivity, efficiency, and customer satisfaction.

Associative strength implies a cooperative behaviour that facilitates cohesion within the organisation, which is also evident at the individual-level. Barr *et al.* (2001), in their analysis of recycling behaviour in Exeter, show the formation of cooperative behaviour among households, which, over time, contributed to sustained behaviour change. As discussed in Section 3.2 above, Barr *et al.* (2001) developed three predictors of cooperative behaviour: environmental values, situational variables, and psychological variables. The study concluded that environmental values among individuals, along with

[22] The UK Plastics Pact aims to transform the UK plastic packaging sector by 2025 by aiming for '100% of plastic packaging to be re-usable, recyclable or compostable; 70% of plastic packaging effectively recycled or composted; take actions to eliminate problematic or unnecessary single-use plastic packaging items through redesign, innovation or alternative (re-use) delivery models; and 30% average recycled content across all plastic packaging' (WRAP, 2018j).

social pressure to behave in an environmentally friendly manner, were the two primary forces that built cooperation among households in Exeter.

Studies by Campbell (2007), Goldstein *et al.* (2008), and Payne and Raiborn (2001) indicate that associative strength, as a willingness to change current behaviour because of individuals' strong identification with an organisation, can in turn be translated into cooperative behaviour, encouraging them to begin working towards a common goal. As discussed above in Section 3.5.1.2, Kelman (1958) describes 'identification' as the adoption by a group of a value system that influences others to cooperate within this value system, in order to receive a favourable reaction from the group.

Empirical studies by Dijksterhuis *et al.* (2000) and Dijksterhuis and Bargh (2001) indicate that associative strength functions through communication and can lead to the development of stereotypes. Stereotypes are commonly considered to be negative. However, they can function in a positive way, by activating associated traits which create real motor change representations (i.e. neurological changes) that in turn trigger reward patterns within the brain, resulting in lasting change in actual behaviour.

Thus far, it has been shown that salient environment, social context and situational norms can transform communication into action by developing associative strength among individuals in a group or organisation. In doing so, associative strength may enhance productivity, efficiency, customer satisfaction, cohesion, and imitation, and play a role in creating a changed social norm. Nonetheless, it is important to acknowledge that associative strength is not inherently positive: in some cases, it may lead to destruction, inefficiency, and unproductiveness, causing organisations to become uncaring and defeatist. However, finding the factors that contribute to building associative strength is here considered a positive move, as this may support re-use behaviour. Nevertheless, these non-economic variables are interdependent and thus, depending on the context, they might not have this transformative effect if applied individually in real-life situations.

Collectively the studies demonstrate that individual and organisational behaviours are related: change in the individual's behaviours and values can lead to change in organisations. For instance, Dewhurst and Thomas (2003) present the effect of owners' childhood experiences and personal values on their organisational decision making. Along similar lines, Nye and Hargreaves (2010) show how environmental champions create a social context that affects the organisation's decision making. Peng and Chiu (2010) demonstrate the development of associative strength between supervisor and employee, leading to change at the organisational level. Finally, Campbell (2007),

Goldstein *et al.* (2008) and Payne and Raiborn (2001) present the effect on the organisation of individuals' strong identification.

The following section reviews studies providing evidence for the second variable under the Engagement/action category, namely, economic variables.

3.5.2.2 Economic Variables

Lachman *et al.* (1994), in their study on cross-national management and organisations, argue that resources and the availability of technology have a significant impact on organisations' ability to adapt in response to pressure.

Thogersen (2007) studies the activation of social norms at individual levels, and builds on this argument by indicating that greater availability of resources is an economic benefit which increases the chance of cooperation among individuals and motivates behaviour towards a required goal.

The above studies show that the availability of money or resource incentives motivates both individuals and businesses. This is evidenced in Campbell's (2007) study of corporate social responsibility (CSR), which suggests that financially secure companies are more likely to behave in a socially responsible manner. Thus, those companies are more adaptive to behavioural change. Furthermore, in their study investigating the international public policy spectrum to understand the drivers behind people's choices and behaviour, Prendergrast *et al.* (2008) identify the availability of financial resources as a critical driver for influencing behavioural change. Therefore, studies of both individual and organisational levels indicate the availability of resources as a common factor that contributes to transforming communication into engagement or action.

Although for convenience the economic and non-economic variables are represented separately in Figure 3.3 below, in real-life situations, facilitating pro-environmental behaviour may vary depending on the type of re-use (waste management) activities within organisations.

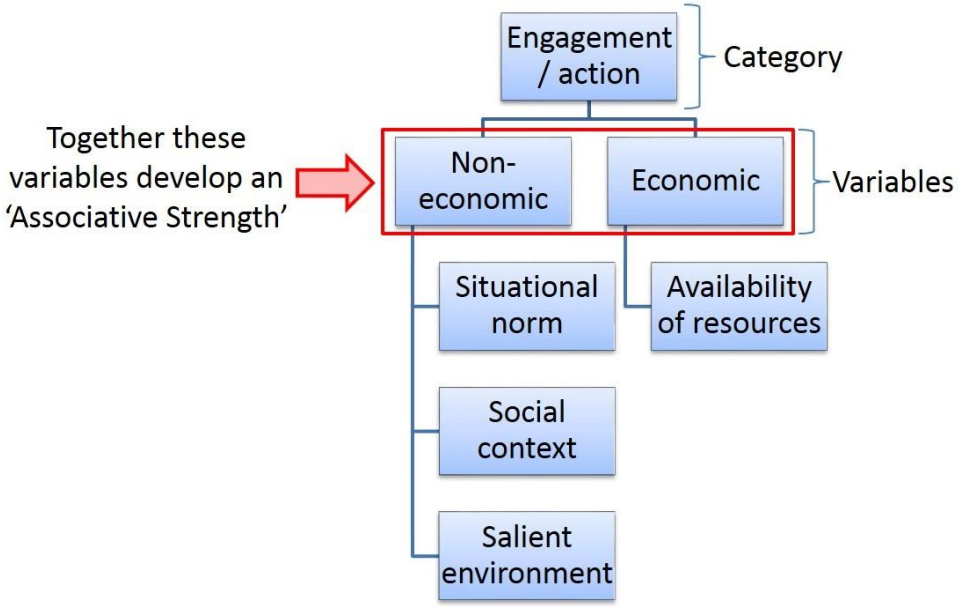


Figure 3.3: Engagement/action variables, formed by sorting and grouping the upper-level groups

Rothman's (2000) study of behavioural maintenance argues that a link needs to be developed between achieving the goal and encouraging action in order to transform behaviours from new actions to normative and embedded habits. In essence, he means that the newly acquired behaviour needs to be maintained and repeated over time in order to transform it into a habit or a normative behaviour.

The following section establishes the importance of maintaining behaviour as another important category for facilitating behaviour change.

3.5.3 Behavioural Maintenance (B)

Making a change is one thing, but maintaining and monitoring this change requires a strategic approach. Evaluation of the new behaviour (in the case of re-use: specifically maintaining re-use behaviour) depends on an effective monitoring process.

Measuring and monitoring are essential to ascertain that the changed behaviour is maintained to establish it as a normative behaviour (Rothman, 2000). Vlek (2000) argues that regular measuring and monitoring of changed behaviour helps to identify and overcome practical barriers and challenges.

The behaviour studies listed in Table 3.4 below discuss behavioural maintenance as a crucial category in behaviour change within individuals, group or organisations.

Table 3.4: Studies featuring behaviour maintenance as a crucial category

Individual studies	Organisational studies
Budeanu (2007)	Kanter (1999)
Groot and Steg (2007)	-
Rimal and Real (2003)	-
Rothman (2000)	-
Vlek (2000)	-

Kanter (1999), in his study of organisational innovation through public-private partnership (PPP), concluded that a commitment to change is required to maintain successful long-term change within organisations. This results in long-term benefits such as job creation in poor communities and high-quality financial services for disadvantaged minorities.

Similarly, in his study of the long-term effects of behaviour change intervention strategies, Rothman (2000) argues that maintaining behaviour depends on perceived satisfaction with the resultant outcomes. Adopting a new behaviour and embedding it as a habit requires repeated assessment of satisfaction levels; individuals within a group also need to know the benefits attached to the change. He concludes that:

> given that the repeated application of intervention strategies that facilitate short-term success does little to improve rates of long-term success, the premise that there are important differences in the psychological processes that govern behavioural initiation and maintenance appears worthy of consideration. (2000, p.65)

Rimal and Real's (2003) study involved 353 undergraduate students from Texas A & M University in assessing perceived norms. The students were given a computer-based task and asked questions related to smoking and drinking habits. The findings showed that individuals do not simply change their behaviour by mimicking others; rather, they assess the benefits before making decisions.

A study of sustainable tourist behaviour by Budeanu (2007) indicates that one of the factors that influence pro-environmental tourists demonstrates a willingness to change their holiday booking behaviour and purchase patterns in response to perceptions of the eco-friendliness of destination. That is, if the destination involved offers activities such as voluntary holidays and eco-tours, the sustainable tourist is likely to book these types of holiday destinations over those without pro-environmental activities.

This is in line with the findings of Groot and Steg (2007) discussed above, which tested the TPB framework with a questionnaire about people's intention to use a park-and-ride

facility. The results indicate that perceived advantage or benefit to using the facility is identified as one of the key factors influencing intention.

Thus, both individual and organisational level studies indicate that maintaining behaviour change through regular monitoring of individuals in a group or organisation is directly linked to the level of satisfaction with, and benefits attained from, the newly formed behaviour.

In the empirical study, any data and studies showing evidence of measuring and monitoring is assigned to the Behavioural maintenance category, which is represented with its variables in Figure 3.4 below. Nonetheless, measuring and monitoring can only occur when there is an action to measure, so Behavioural maintenance is dependent on Engagement/action.

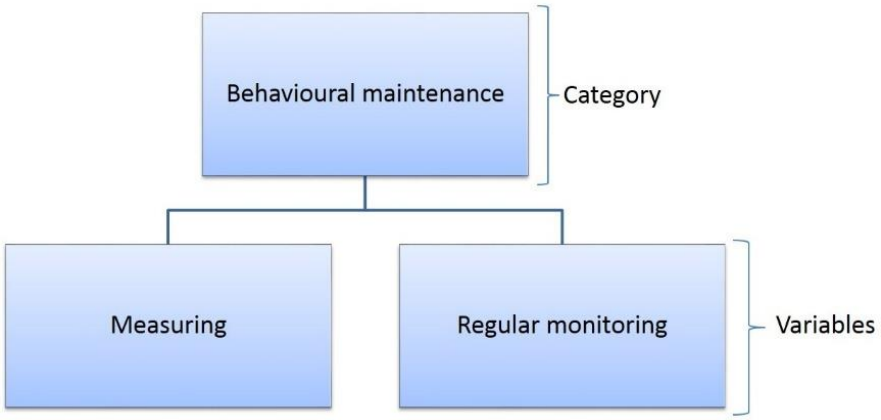


Figure 3.4: Behavioural maintenance, formed by sorting and grouping the upper and lower-level groups

The Communication, Engagement/action, and Behavioural maintenance categories, when applied together, can be used for instigating and maintaining behaviour change. Nevertheless, a critical barrier to transforming changed behaviour into a norm, which was identified in the literature review of the key pro-environmental frameworks (Section 3.3.1 above), is the gap between the willingness to act and the actual behavioural change: the value action gap.

There can be instances where behaviour does not change, as there may still be a gap between intention and actual behaviour. Therefore, minimising the value action gap is another main category of the framework.

3.5.4 Avoidance of the Value Action Gap (A)

The following behaviour studies in Table 3.5 pertain to avoidance of the value action gap as a crucial category in avoiding the barriers to promoting and maintaining behaviour change within individuals, groups or organisations.

Table 3.5: Studies featuring avoidance of the value action gap as a crucial category

Individual studies	**Organisational studies**
Berkowitz (2004)	Kaiser *et al.* (2010)
Kollmuss and Agyeman (2002)	Prendergrast *et al.* (2008)
Pickett-Baker and Ozaki (2008)	Thaler and Sunstein (2009)
Prentice and Miller (1996)	-
Thaler and Sunstein (2009)	-

In their study of the influence of marketing on consumer purchase decisions, Pickett-Baker and Ozaki (2008) argue that the value action gap is a phenomenon that tends to develop due to misperceptions. According to them, the value action gap is the difference between beliefs and actual behaviours. They illustrate this with the example that 'an individual concerned about the environment does not necessarily behave in a green way in general, or in their purchasing' (2008, p.282).

As discussed in Section 3.3.1 above, Kollmuss and Agyeman (2002) concluded that the value action gap is a common cause of failure in pro-environmental behaviour models. They claim that many such models fail to take individual, social, cultural, and economic constraints into account as the models assume that humans are rational beings, who make systematic use of information provided, whereas, in reality, this may not be the case.

Kaiser *et al.* (2010) conducted a study on 'reviving Campbell's paradigm for attitude research', in which they illustrate that the discrepancy between verbal evaluations and actual behaviour is the cause of several difficulties. They concluded that avoiding misperceptions or the value action gap needs to be considered when applying behaviour change studies to real-life practices.

In his study of social norms, Berkowitz (2004) also found that a gap can occur between perceived and actual norms, leading to a misperception. Thus, he argues that 'it is extremely important to determine the most salient and relevant influences on the target group before designing an intervention to make sure that the norms being corrected are influential' (2004, p.21).

Nonetheless, Berkowitz indicates that clear communication and facilitating engagement may potentially avoid the value action gap. He explains that because of the lack of clear communication and action on that communication, 'pluralistic ignorance'[23] develops. Pluralistic ignorance occurs 'when a majority of individuals falsely assumes that most of

[23] 'Pluralistic ignorance refers to the social phenomenon in which individuals guess wrongly about a group's beliefs and values' (Study.com, 2015).

their peers behave or think differently… [about something]…when in fact their attitudes or behaviours are similar' (2004, p.7).

Pluralistic ignorance is also discussed by Thaler and Sunstein (2009) in their book *Nudge*. They claim that pluralistic ignorance is a persistent problem in many social practices that must be considered during the behaviour change investigation.

Prendergrast *et al.* (2008) indicate that if a message is complex, and if in an organisation there are limitations to an individual's cognitive processes, this could lead to pluralistic ignorance, thus contributing to the value action gap. Nonetheless, Prentice and Miller's (1996) study of pluralistic ignorance at the individual level suggests that to avoid the value action gap, the social norm of changing behaviour must be influential enough to prevent people from being swayed by their private thoughts and opinions.

They further argue that social perception is mostly guided by observation; a strong message, therefore, has the power to correct pluralistic ignorance by communicating facts and knowledge to a wider group, thereby shaping that group's attitudes and behaviour. Prendergrast *et al.* (2008) likewise argue that a powerful and simple message considers individual variability and therefore acts as an internal drive to prevent the manifestation of a value action gap within a group.

Thus far, both individual and organisational level studies indicate that, to avoid the value action gap, it is crucial to understand the social, cultural and economic circumstances of individuals within a group or organisation. Secondly, it is vital to communicate a powerful message explicitly and clearly. Finally, it is essential to act on communication. This represents an association between the individual and organisational level studies, thus further demonstrating the imbrication between them.

In the empirical research, any data and studies showing evidence of communication (through guidelines), Engagement/action, and diversity/CSR (that is, social, cultural, and economic circumstances) are assigned to the 'Avoidance of the value action gap' category. This facilitates analysis of the factors and barriers organisations face in making re-use a normal activity. Although these variables are represented separately in Figure 3.5 below for the purpose of this study, in real-life situations there is extensive interdependency and connectivity among the categories and variables.

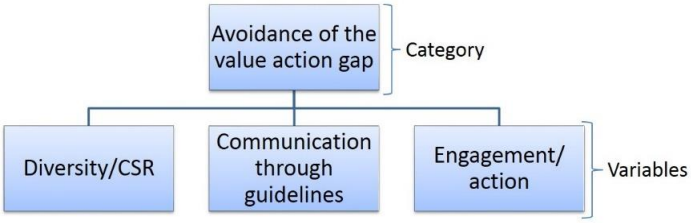


Figure 3.5: Avoidance of the value action gap, formed by sorting and grouping the upper and lower-level groups

3.6 CONCLUSION

It is not enough to simply acquire a new set of beliefs around a principle (such as re-use). The acceptance of a new value system, leading to decisive and sustained action, requires support and reinforcement of the behaviour, via a variety of means, as illustrated above.

Figure 3.6 below presents a schematic diagram of the pro-environmental framework that has been developed in this chapter using snowballing and the inductive approach by selecting and analysing pro-environmental behaviour studies.

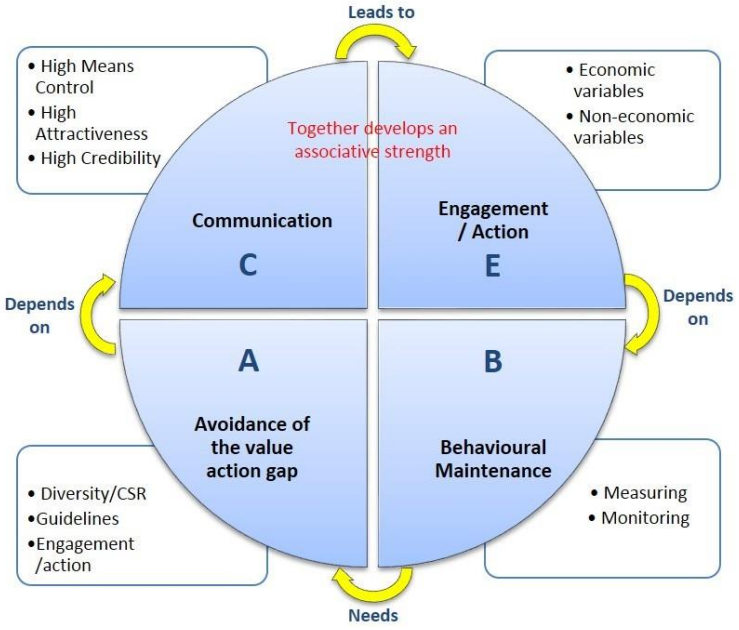


Figure 3.6: The pro-environmental framework (CEBA) (Tavri, 2019a)

Figure 3.6 shows Communication, Engagement/action, Behavioural maintenance and Avoidance of the value action gap as the key categories facilitating behaviour change leading to a wider transformation and maintenance within individuals, groups or organisations.

In this thesis, the pro-environmental framework is called ‘CEBA’. It is used as an analytical tool for investigating re-use behaviour at the organisational level. Figure 3.6

also illustrates how the categories and variables forming the pro-environmental framework (CEBA) are interconnected and dependent on one another.

Firstly, within the category of Communication, the variables essential for investigating established normative messages are high means control (mandatory rules and regulations), high attractiveness (feedback and peer pressure), and high credibility (achievements, guidelines, and innovations).

Secondly, within the Engagement/action category, the identified variables essential for investigating factors facilitating the transformation of normative messages into action, in turn enabling development of associative strength, are economic variables (availability of resources) and non-economic variables (social context, situational norm and salient environment).

Thirdly, the Behavioural maintenance category enables investigation of the factors that establish a link between a goal and action.

Finally, the fourth category, Avoidance of the value action gap, identifies the mechanisms which are indispensable for avoiding the barriers to encouraging and maintaining behavioural change.

In this thesis, to investigate re-use behaviour and evaluate the factors facilitating its maintenance, it is important to consider that each category and its variables are acknowledged and strategically accounted for when using the framework for the empirical investigation. This is because the categories and variables are interdependent, and depending on the type of organisation, and the type of re-use materials each organisation specialises in, some links (categories and variables) may be more important than others.

This CEBA pro-environmental framework will be used as an analytical tool in the empirical portion of this study to investigate the mechanisms and barriers that the vanguard organisations in the UK encounter in adopting re-use behaviour. The next chapter details the research approach and methods related to the execution of the empirical study.

4. CHAPTER FOUR: RESEARCH APPROACH AND METHODS

4.1 INTRODUCTION

The aim of this research is to investigate perceptions of re-use among UK corporations and their re-use supply chains, and the factors facilitating and preventing the re-use of materials from becoming normal practice. The focus is on those organisations that are identified as being in the vanguard of moving up the waste hierarchy by the Waste and Resource Action Programme (WRAP) 2012 and 2013 business case studies (Section 1.3).

The companies included in this sample selected from WRAP exhibit similar features in terms of being probable leaders in the field of waste management. This characteristic first showed its relevance when the literature review identified a lack of re-use studies at the organisational level, demonstrating a gap in the area of study (Section 2.4).

In applying the pro-environmental framework to this investigation, a mixed-methods approach was chosen. The rationale for and the issues surrounding the approach and methods are explored in this chapter. Figure 4.1 below provides a schematic illustration of the structure of this chapter.

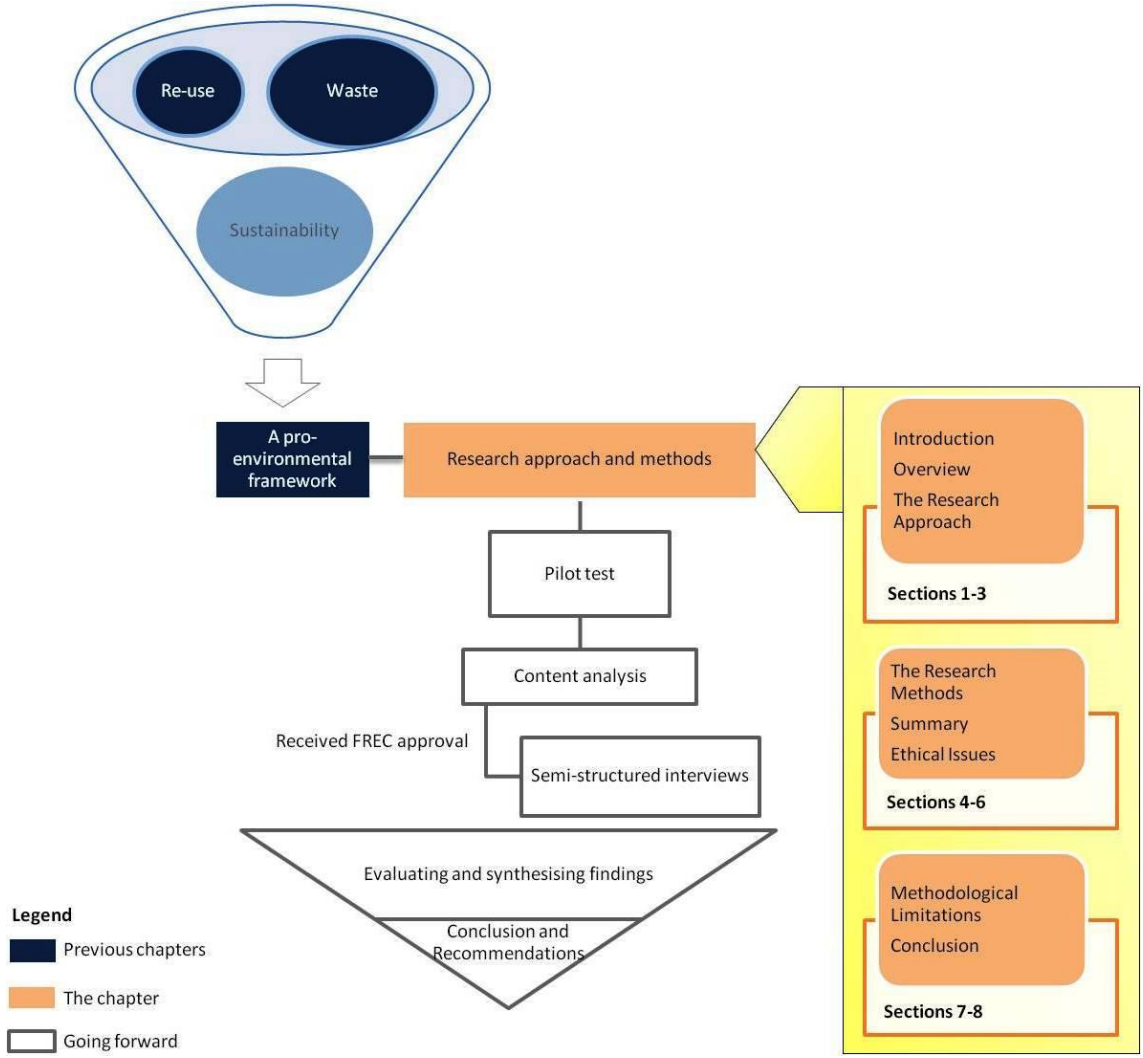


Figure 4.1: The Methods chapter

4.2 OVERVIEW

This chapter presents the approach and methods of this research investigation and provides a justification of the method of sampling, while also acknowledging the other processes that could have been used.

For the purpose of this research investigation, a sequential mixed-methods approach (Section 4.3.2) was proposed as the most appropriate method. In so doing, firstly, this thesis combined qualitative and quantitative procedures by using a content analysis method, which set a foundation for exploring and identifying issues. This initial investigation confirmed the need for a more detailed qualitative exploration at the latter stage of the study, which used semi-structured interviews with individuals from corporations and their re-use supply chains included in the content analysis study. Interviewees were sampled through snowballing/referral techniques.

Full accounts of the findings are presented in the subsequent chapters (Chapter 5 to Chapter 7), which adopt a sequential approach in order to describe the exploration of the mechanisms and barriers among the sample organisations regarding re-use behaviour.

Amaratunga *et al.* observe that at the start of the research process:

> the researcher should aim to achieve a situation where blending qualitative and quantitative methods of research can produce a final product which can highlight the significant contributions of both. Quantitative data could help with the qualitative side of a study during design by finding a representative sample and locating deviant samples, while qualitative data can help the quantitative side of the study during design by aiding with conceptual development and instrumentation. (2002, pp.23–4)

This chapter provides a thorough account of the design of the mixed-methods approach adopted, addressing the ways in which the qualitative and quantitative methods complement each other.

4.3 THE RESEARCH APPROACH

The aim of this research and the consequent research questions (Chapter 1) steer this thesis towards adopting a primarily qualitative methodology. Furthermore, the literature review of pro-environmental behaviour studies (Chapter 3) indicates that investigating and evaluating behaviour requires a deep and rich understanding through the use of flexible data-gathering techniques, based on sensitivity to the social context. According to Baabereyir (2009), Burrell and Morgan (1989), and Mills and Briks (2014), this can be achieved by qualitative methods based on interpretivist assumptions, which allow for the interpretation of actions and the employment of flexibility.

Nevertheless, Baabereyir (2009) also states that, while qualitative methods are most often used to investigate behaviour, qualitative and quantitative methodologies are not necessarily mutually exclusive. Depending on the context, there may be some interrelation between the two, whereby the limitations of one are compensated for by the benefits of the other. This is discussed and elaborated in the next section.

4.3.1 Qualitative and Quantitative Procedures

Qualitative method seems like a natural choice for the purpose of investigating the vanguard organisations' perceptions of re-use. However, the review of the literature on re-use of materials (Chapter 2) indicated a paucity of evidence, suggesting that no

consensus has emerged as to a generally applicable optimal technique for investigating re-use behaviour at the organisational level. Therefore, recognising this paucity (Section 2.4) and considering the heterogeneous (and potentially contradictory) nature of this research investigation (Section 1.3), I used a mixed-methods approach. This decision was informed by the view of Amaratunga *et al.* that 'quantitative data could help with the qualitative side of a study during design by finding a representative sample and locating deviant samples' (2002, p.23).

It has been more than three decades since Guba and Lincoln (1985) described integrating qualitative and quantitative methods as an inappropriate approach. They argued that such an approach fails to recognise the distinction between a paradigm and a method. According to them, to fulfil its potential, use of any data-gathering technique involves commitment to a specific approach, thus making combination of approaches incongruous. In essence, they suggest that, rather than complementing each other, the two approaches could effectively negate each other's benefits.

Grix (2004) observes that the quantitative approach carries clear and distinct benefits, especially with regard to the opportunities it offers for a more sensitive and nuanced analysis. He further emphasises that the quantitative method is usually a very structured approach, in which competing explanations are formulated in terms of the relationships between variables. Miller and Brewer (2004) further state that the results of quantitative methods usually condense into a number of key attributes, which are generally taken as indicators or variables. They also specify that the ultimate goal of quantitative research is 'to find as small a set of variables as possible, which explain as much as possible' (2004, p.193).

Unlike a quantitative approach, a qualitative one 'usually involves in-depth investigation of phenomena through such means as participant observation, interviewing, archival, or other documentary analysis, or ethnographic study' (Ragin, 1994, p.91). Ragin (1994) observes that the language of qualitative research tends to revolve around case studies and social contexts, instead of variables and hypotheses. As noted by Holloway, 'qualitative research involves the interpretation of data…in their social and cultural context over a specific period of time' (1997, p.80).

Despite the differences between the two approaches, some more recent studies have pursued a combined approach using both, and have argued that this can facilitate a more balanced way of proceeding. Authors have approached this combined method in various ways, including triangulation (Blaikie, 2000; Grix, 2004), multi-strategy research

(Bryman, 2004), mixed-methods research (Creswell, 2003), and multiple methods (Robson, 1993). They have argued that these methods should be viewed as mere tools for collecting data, rather than regarding them as indicative of an epistemological commitment.

Certain studies recognise that there is much to be gained from a mixture of quantitative and qualitative methods in a single study of social phenomena (Creswell, 2003; Denzin, 1989; Grix, 2004; Robson, 1993). For instance, Creswell (2014) suggests three models of the mixed-methods approach that can be adopted in social science research by using different methods, sources, investigators, or theories. They are the convergent parallel mixed-methods approach[24], the exploratory sequential method[25], and the explanatory sequential mixed-method[26].

Robson (1993) argues that in most cases, a social science research question can be approached by more than one method, because no rule dictates that only one method must be used in an investigation. He further reasons that using both qualitative and quantitative methods in a single investigation can have substantial advantages. This is also the view of Grix, who observes that 'as long as you are aware of how you are employing a specific method, and what this method is pointing you towards, and how this relates to the ways you employ other methods, there should be no problem' (2004, p.84).

Grix (2004) further suggests that using more than one method in a single investigation improves the quality of the research by achieving more reliable data, thereby creating a more detailed and holistic picture. Likewise, Amaratunga *et al.* contend that 'combining qualitative and quantitative methods enables confirmation and corroborations; elaborates or develops analysis, providing richer details; and initiates new lines of thinking through attention to surprises or paradoxes' (2002, p.23).

All such arguments militate for the use of a mixed-methods approach in the current research. In the following, the mixed-methods approach is therefore discussed in greater detail.

[24] 'In which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem' (Creswell, 2014, p.15).
[25] 'In which the researcher first begins with a qualitative research phase and explores the views of participants. The data are then analysed, and the information used to build into a second, quantitative phase' (Creswell 2014, p.16).
[26] 'The researcher first conducts quantitative research, analyses the results and then builds on the results to explain them in more detail with qualitative research' (Creswell 2014, p.15).

4.3.2 Mixed-Methods Approach

The mixed-methods approach has evolved much since it originated in the 1950s (Johnson *et al.,* 2007). Certain studies recognise the usefulness of a mixed-methods approach in line with those indicated above (Section 4.3.1).

Mertens and Hesse-Biber (2013) argue that the mixed-methods approach can provide synergies between the methods adopted. Rossman and Wilson (1985) elaborate that in a mixed-methods approach, one method enables the other to provide a clearer understanding of the problem under evaluation. Meissner (2010) suggests that it allows different methods to draw on their respective strengths, and negate potential weaknesses. Teddlie and Tashakkori term this 'methodological eclecticism' (2010, p.11).

Nevertheless, Greene (2007) cautions that in a mixed-methods approach, it is essential to make a decision on the level of interaction between qualitative and quantitative methods. A sequential use of quantitative and qualitative methods can facilitate the use of one method to address issues previously posed by another method, which, as indicated by Creswell (2014), enhances the validity and credibility of the research. Furthermore, Denzin (1989) argues that no single data collection method (such as a questionnaire, interview, or documentary analysis) can completely encapsulate all the relevant features of a study and fulfil the relevant criteria for exploring the multiple gaps and challenges within the field. Thus, this thesis takes the view advanced by Bryman that 'combining different methodologies in a single study enhances the researcher's claim for the validity of his or her conclusions if they can be shown to provide mutual confirmation' (2004, p.131).

In the current study, reliance on any single approach to data-gathering would have led to the loss of valuable information: firstly because of the lack of literature regarding re-use at the organisational level, and secondly because of the heterogeneous (and potentially contradictory) nature of the research investigation. That is, reduced consumption through re-use may be at odds with corporations' ambitions to create long-term profit.

To finalise the appropriate methods for this research investigation, and ensure that their combination ensures the benefits identified above, a pilot study was undertaken. This pilot study indicated the need for a method that could produce a quantitative dataset on re-use behaviour, in order to carry out further in-depth analysis.

The need for further qualitative analysis is based on the fact that this research is focused on investigating re-use behaviour among organisations, and hence, as discussed in

Section 4.3.1, an interpretivist epistemological position seems most suitable. Furthermore, the review of pro-environmental studies (Chapter 3) showed that behaviour change is a multi-faceted issue, requiring interpretation of a range of actions. Therefore, it is essential to gather information in a way which accounts for the complexities of the various challenges faced by different types of organisations. Additionally, the qualitative process involves different levels of engagement and thus certainly falls within the interpretivist paradigm.

4.4 THE RESEARCH METHODS

This study employs content analysis and semi-structured interview methods. The following sections detail the stages in which each of these methods are used.

4.4.1 Stage 1: Background

Research methods used in social science include experiments, surveys, archival research methods, history, and case studies (Creswell, 2007; Ragin, 1994). To choose an appropriate method for a particular investigation, Yin (2008) produced a series of questions, which can be adapted according to circumstances (Table 4.1).

Table 4.1: Relevant situations for different research approaches (Yin, 2008)

Strategy	Form of research question	Requires control of behavioural events?	Focuses on contemporary events?
Experiment	How, Why?	Yes	Yes
Survey	Who, What, Where, How many, How much?	No	Yes
Archival research methods	Who, What, Where, How many, How much?	No	Yes/No
History	How, Why?	No	No
Case study	How, Why?	No	Yes

Yin (2008) indicates that in order to conduct an experiment, survey, or case study, it is essential to have some form of database and also a strict hypothesis.

In this study, the lack of data on re-use behaviour at the organisational level or a strict hypothesis makes these strategies unviable (at least at this point). Because the focus of this research is on contemporary events and investigation, history is also not an appropriate strategy for this thesis. Nevertheless, archival research methods, which in the classic sense involve the study of historical documents, are considered to be an appropriate strategy at this point in the research because this method is also used in contemporary investigations. This is illustrated by Ventresca and Mohr (2001, p.2), who argue that ‘archival research methods include a broad range of activities applied to facilitate the investigation of documents and textual materials produced by and about

organisations, often as tools to supplement other research strategies (field methods, survey methods, etc.)'.

To carry out document analysis of this form, it was judged essential for this research to select sample organisations from the WRAP 2012–13 business case studies. However, as indicated in Section 8.5, this could be considered a limitation, because it narrowed down the research investigation to probable leaders in waste management and their re-use supply chains. Nevertheless, they all represent a salient feature of moving up the waste hierarchy, which thus demonstrates a coherency.

Coherence and interdependence are identified by Lincoln and Guba (1985) as being among key factors that describe different characteristics of operational naturalistic inquiry. According to them, when doing research from a naturalistic perspective, coherency in the sample 'results in insights and information about the sending context so that the extent of transferability and applicability in some other receiving context may be judged' (1985, p.43).

This was essential for this research that uses a mixed-methods approach in a sequential manner, whereby, findings posed by one method are utilised to develop another method (Creswell, 2014; Grix, 2004).

All organisations from the WRAP 2012 and 2013 business case studies were selected for the investigation. At the time of the empirical study, this represented the most up-to-date information of organisations that are considered as vanguard in moving up the waste hierarchy. Despite providing insight into the organisations' progress towards waste management over a very short timeframe, this nevertheless helped to identify a list and the type of organisations that could be considered to be at the leading edge of waste management in the UK.

The types of organisations included were retailers, construction companies, waste service companies, manufacturers, and third sector organisations (TSOs). To identify the evidence of re-use amongst these vanguard organisations, a pilot study was conducted on five of these companies using archival research methods, including document analysis of the organisations' self-published reports.

4.4.2 Stage 2: The Pilot Study – Document Analysis

The pilot study focused on five organisations listed as the first five case studies (using the generic website search tool at the time) on the WRAP website (www.wrap.org.uk) for the years 2012 and 2013.

The pilot study focused on the three-month period August–November 2013. The organisations selected were: a self-proclaimed vanguard mixed retailer; a mixed retailer; a food retailer; a construction company; and a TSO. The pilot study enabled the use of the research tool, CEBA, and the exploration of the effectiveness of document analysis as a method for facilitating a full empirical study.

The documents analysed included sustainability reports, where available, and annual reports of all five companies. According to Ventresca and Mohr (2001), this form of investigation using contemporary documents can be considered to form part of the archival research method. They define the archival method as 'a loosely coupled constellation of analytic endeavors that seek to gain insights through a systematic interrogation of the documents, texts, and other material artifacts that are produced by and about organizations' (Ventresca and Mohr, 2001, p.2).

Text and graphics were systematically gathered from the organisations' reports, and then were analysed against CEBA categories using a Likert-scale. These offered insights into organisations' attitudes and approaches to waste management. According to Bauer and Gaskell (2000), such a form of analysis is a statistical treatment of the text units. Miles and Huberman (1994) stress that selection of the unit of analysis is very much tied to the specific context in which a phenomenon occurs. For the purpose of this study, the specific context was the organisations' self-published reports that required analysis.

The measurements were based on a simple three-point Likert-scale, which provided a clear way of defining evidence of re-use behaviour. In the scale, 3 indicates 'strong' evidence for re-use, 2 demonstrates 'some' evidence and 1 indicates 'only weak', if any, evidence of re-use.

At this point, the intention was simply to explore the potential of the organisational reports for use as data sources for a detailed analysis. Therefore, the simpler three-point Likert-scale was preferred to a five-point one. Moreover, Boone and Boone, Jr. (2012), Johns (2010) and Likert (1932) indicate that in most cases the three-point scale produces the clearest results. This was also the first time that CEBA was used as an analytical tool in

the study; therefore, the three-point Likert-scale was considered the most appropriate prior to using CEBA for the full empirical study.

Table 4.2 sets out categories and variables taken from the framework (CEBA), against which pilot study organisations' objectives, policies, and achievements were considered and quantified. This association is extensively elaborated on in Appendix II, Section 9.2.1; Table 9.3. The precise approach to engaging with this analysis is further elaborated in Chapter 5, 'Content analysis of organisations'.

Table 4.2: Likert-scale

Categories and Variables (CEBA)	**Meanings** (from the pro-environmental framework Chapter 3)	**Likert-scale** Objectives, policies, and achievements (from organisations' reports)	3	2	1
Communication: high means control	Compliance	Waste hierarchy and/or zero waste to landfill			
Communication: high attractiveness	Feedback and peer pressure	Feedback			
		Comparative analysis			
Communication: high credibility	Knowledge and facts	Guidelines			
		Innovation			
		Achievements			
Engagement/Action	Non-economic variables	Non-economic benefits			
	Economic variables	Economic benefits			
Behavioural Maintenance	Measuring and monitoring	Measuring			
		Regular monitoring			
Avoidance of the value action gap	Avoiding difference in beliefs and actual behaviours	Diversity/CSR			
		Guidelines			
		Engagement/Action			

The pilot study provided a tentative ranking, revealed through the employment of the simplified three-point Likert-scale. This result demonstrated the potential for further exploration and a more extensive analysis, based on the more complex five-point Likert-scale for more detailed results. This tentative analysis further indicated the feasibility of CEBA as an analytical tool for a wider sample, which would then provide a baseline for the sharing of information between organisations and the emergence of re-use practice examples.

This method of document analysis demonstrated the richness and productivity of using organisations' self-produced reports and the Likert-scale technique for further investigation, and has also been published as Tavri *et al.* (2014).

4.4.3 Stage 3: The Content Analysis Method

After reviewing the document analysis process of the pilot study, content analysis was identified as the most appropriate method for the next stage of the research investigation. This is because, as Ventresca and Mohr (2001) describe, content analysis is a formal analytic technique of the archival research method (Section 4.4.2), in which the 'archival'

aspect refers to the collection of data, and content analysis is the analysis of data so obtained. Furthermore, according to Abbott and Monsen (1979), content analysis is the only approach to document analysis that involves analysing textual data and deriving a set of codes that can be quantified. This fits in well as similar to the pilot study; the content analysis will also involve gathering qualitative information from organisations published reports, which will be categorised against CEBA and will result in quantitative scoring through Likert-scale analysis. In addition, as a hybrid technique, the use of content analysis will help bridge the unproductive dispute over the quantity/quality divide. Bauer and Gaskell (2000, p.132) elaborate on this as follows:

> content analysis is the only method of text analysis that has been developed within the empirical social sciences. While most classical content analyses culminate in numerical descriptions of some features of the text corpus, considerable thought is given to the 'kinds', 'qualities' and 'distinctions' in the text before any quantification takes place. In this way, content analysis bridges statistical formalism and the qualitative analysis of the materials.

In order to effectively engage with the content analysis method, this thesis draw on relatively 'old' research, from the early days of content analysis as an approach, and to combine what might be viewed as 'outdated' literature with more recent work. Highlighting the continued relevance of the content analysis by integrating studies from the 1950s–1970s with more recent studies could potentially be considered as one of the rich and holistic ways of approaching the method.

Since 1952, several studies have defined content analysis as a method that is distinctively objective, systematic, and quantitative (see for example: Berelson, 1952; Budd *et al.*, 1967; Fearing, 1952; Holsti, 1968; Kerlinger, 1964; Lasswell *et al*., 1952; and Paisley, 1969).

Parker's (1970) review of Holsti's *Content Analysis for the Social Sciences and Humanities* (1968) surveys the origin of the content analysis method. Parker (1970) found that, through a variety of examples, Holsti had validated content analysis as a sophisticated methodological procedure, which can coherently organise a disparate collection of material and content.

Given this capacity to reveal coherent patterns within wide-ranging and complex material, content analysis is clearly an appropriate approach to the topic explored in this thesis. Moreover, recent studies indicate that content analysis is commonly used for analysis of organisations' annual reports and other corporate documents, further justifying its

selection for the empirical study (Pollock, 1998; Porac *et al.*, 1995; Porac *et al.*, 2000; Salancik and Meindl, 1984). Its further relevance is explored next.

Weber (1990) defines content analysis as a method that uses text to produce valid inferences. He also states that, since communication is the central aspect through which the research is conducted, and both qualitative and quantitative approaches are used to analyse texts, the documents selected for analysis can be from various sources.

Kolbe and Burnett's (1991) study on consumer researchers defined content analysis as a method that systematically evaluates the symbolic content of all kinds of recorded communication. They further note that content analysis has the ability to access both environmental variables (e.g., regulatory, economic, and cultural factors) and source characteristics (attractiveness, credibility, and likeability). This indicates that content analysis can be used to analyse text from various sources, and could also allow them to be measured against the CEBA framework, thus making it an appropriate method for this study.

There are nevertheless several weaknesses to the content analysis method that need to be taken into account when employing it. Firstly, according to Kolbe and Burnett (1991), content analysis is prone to the effects of researcher misrepresentation, in terms of subjectivity when analysing information, which may in turn affect the way researchers approach and perceive results, creating a potential bias in both the results and the research as a whole. Secondly, although rich categorical data can be produced from content analysis, it is potentially less robust than data collected from other research methods (Kolbe and Burnett, 1991). This could make the analysis less reliable (Weber 1990).

Acknowledging these limitations of the content analysis method, this research adopts the precautions advised by Mason (2002). She recommends not taking documents as a direct representation of reality, because they are always written or constructed from a specific (and potentially biased) perspective, and thus, no document provides straightforward evidence or representation. Further, engaging content analysis as only one aspect of the study mitigates the potential disadvantages and misrepresentation which are an inherent issue when content analysis is the sole method used.

Furthermore, the data drawn from the organisational reports was organised using the Nvivo data analysis software package, a tool that can greatly expedite the analysis process. The use of Nvivo in this study was informed by Weber (1990), who suggests that computerised classification potentially leads to perfect coder reliability, depending on how well the process is set up by the researcher. He stresses that it is crucial for the

research to be approached in an objective manner, negating the impact of any personal subjectivity on the results.

According to Bauer and Gaskell (2000), there are two types of texts that can be used in content analysis. The first is the classic text, which involves the use of existing material from documents such as corporate reports, newspapers, and other publications. The other type comprises text produced as part of the research process, such as interview transcripts and observation protocols. For the purpose of this study, 'classic texts' are considered most appropriate, based on the pilot study process (Section 4.4.2). Nevertheless, in light of the analysis drawn from the pilot study, the term 'classic text' requires slight redefinition for the purpose of this study. Thus, this thesis considers the 'classic texts' for the content analysis to be the existing texts from organisational reports.

4.4.3.1 Process: The Qualitative Analysis

The content analysis was undertaken on 36 organisations considered to be at the leading edge of waste management, as chosen from the list of business case studies conducted in the years 2012 and 2013 provided on the WRAP website (www.wrap.org.uk).

Table 4.3 below indicates the organisations' type and to respect anonymity for ethical reasons (Mills and Briks, 2014), the organisations' names have been replaced with codes.

Table 4.3: Organisations selected for the content analysis

Sectors	**Organisations**
Retail	R0, R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11
Construction	C1, C2, C3, C4
Waste Services	W1, W2, W3, W4
Manufacturing	M1, M2, M3, M4, M5, M6, M7, M8, M9
Third Sector	T1, T2, T3, T4
Other	O1, O2, O3

The content analysis was undertaken as a sequential follow-up study of the pilot study over a nine-month period from December 2013 to September 2014. The reports analysed consisted of: sustainability reports (for organisations R0, R1, R2, R3, R4, R5, R6, C1, W2, W3, M1, M2, M4, M6, M8, M9), corporate social responsibility reports (for organisations R8, R9, R11, C2, C3, C4, M3, M5, O1, O2, O3) and annual reports (for organisations R7, R10, W1, W4, M7, T1, T2, T3, T4) from the selected organisations.

The purpose of this study was to analyse the claims that organisations make in regards to their perception of re-use and their ability to measure and maintain re-use activities, by

reviewing their reports. In so doing, the reports were imported into the computer assisted qualitative data analysis (CAQDAS) software package Nvivo, version 10.

Using Nvivo for the efficient management of the data from the reports enabled a rigorous analysis, allowing me to identify, sort, and link data from the reports with CEBA categories and variables.

In Nvivo, the CEBA categories were set up as thematic nodes. The steps followed in reviewing the individual reports using Nvivo 10 are explained in Appendix II (Section 9.2.1, Box 9.1).

4.4.3.2 Process: The Quantitative Scoring

Kassarjian (1977) states that quantification is a key characteristic that distinguishes content analysis from ordinary critical reading, and it is not relevant which statistical method is used for quantification. Therefore, acknowledging the pilot study, a Likert-type scale was again chosen as an appropriate tool for quantifying the coded data, as it can provide a composite score representing the character or distinguishing features of attitudes and behaviour (Abbott and Monson, 1979; Boone and Boone, Jr., 2012).

Likert-type items are the variables that, in a Likert-scale analysis, are combined together to produce a single score (Johns, 2010; Boone and Bonne, Jr., 2012). Likert-type items need to be clear, unambiguous, and simple. In particular, an item must not contain two different attitudes. Items must not be quantitative statements, since this might create ambiguity while scoring (Johns, 2010). Carifio and Perla stress that

> the language, qualifiers, contexts and precision of expression used in Likert-type items are key to appropriate understanding, conceptualization and communication, and to the avoidance of various mistakes and classification errors and their associated misconceptions and misunderstandings (2007, p.108).

The composite score or result is either the sum or mean of the scores of each Likert-type item (Boone and Boone, Jr., 2012; Johns, 2010; Likert, 1932). To improve the linear and interval scale properties of the resulting composites, the actual variables or Likert-type items can be scaled for refinement, which can be aggregated into the total scale score (Carifio and Perla, 2007).

Likert-type scales offer a way of deriving quantifiable scores from subjective and opinion-based data (Likert-type items) in a way that is technical and representative of the dataset. In this study, the Likert-type scale technique was an appropriate tool for

overcoming the problem of the lack of a database (that is, organisational attitudes towards re-use behaviour).

The simplicity of the three-point scale presented clear advantages for testing the viability of the approach in the pilot study. However, for the purpose of analysing and ranking the information from 36 organisational reports, the efficacy of the three-point Likert-scale used in the pilot study had to be reviewed.

Likert (1932) recommended that the scale could be adapted to range from a two-point to an 11-point scale. Nevertheless, he suggested opting for a five-point scale ranking as normal practice. In a relatively recent study, Johns (2010) states that a five-point Likert-scale is a common choice since it offers a reasonable range of choices, while also having the advantage of making the scoring of variables manageable. Nonetheless, he indicates that there is no theoretical reason to rule out different sizes of response scale, since the chosen range depends on the Likert-type items.

Using Nvivo to organise the data and the Likert-scale for quantification facilitated the production of a richer dataset. The content analysis and quantitative ranking via the Likert-scale enabled the creation of two distinct sets of results, one on evidence of re-use and another concerning evidence of recycling among organisations (Appendix II, Section 9.2.1; Table 9.4).

The CEBA framework variables were used as the Likert-type items (Table 4.4), which as aforementioned fulfil the criteria of being clear, unambiguous, and simple to understand. Furthermore, because these Likert-type items are part of an analytical tool (CEBA) for examining re-use behaviour and its applicability as a normal activity, they helped to avoid any misconceptions (Carifio and Perla, 2007).

Table 4.4: Likert-type items

Categories (CEBA)		**Variables/Likert-type items**
Communication	High means control	Waste hierarchy and/or zero waste to landfill
	High attractiveness	Feedback
		Comparative analysis
	High credibility	Achievements
		Guidelines
		Innovations
Engagement / Action		Benefits
Behavioural Maintenance		Measuring
		Regular monitoring
Avoidance of the value action gap		Diversity
		Guidelines
		Engagement/action

After forming the Likert-type items, qualitative analysis (using Nvivo) of the 36 organisations was undertaken and the most appropriate scoring range for each Likert-type items was decided. During the analysis, it was perceived that assigning the same Likert point scale to every Likert-type item was inappropriate, since the information provided in the reports for each variable or Likert-type item varied considerably. The maximum scoring varied from three to five points, depending on the Likert-type items and their association with the evidence from the organisational reports.

For this study, in the three-point Likert-scale, 3 represents ‘strong’ evidence for re-use, 2 is ‘weak’ evidence and 1 indicates ‘no’ evidence. In the four-point scale, 4 represents ‘strong’ evidence, 3 indicates ‘somewhat strong’ evidence, 2 is ‘weak’ evidence, and 1 shows ‘no’ evidence. For the five-point scale, 5 indicates ‘strong’ evidence, 4 shows ‘somewhat strong’ evidence, 3 represents ‘somewhat weak’ evidence, 2 is ‘weak’ evidence, and 1 indicates ‘no’ evidence of re-use. The same ranking procedure was applied to the evidence on recycling. The decisions regarding the use of the scale to define qualitative data in quantitative terms, and the rankings within the scale, are discussed at length in Chapter 5.

The next section goes on to elaborate on the next stage of the mixed-methods approach, the semi-structured interviews.

4.4.4 Stage 4: The Semi-Structured Interviews

The results of the content analysis raised several queries and challenges, which indicated the need for an in-depth exploration of organisational knowledge, understanding, views, interpretations, experiences, and interactions with regard to re-use of materials. Such an approach, as indicated above, justifies the combination of two methods, in which findings

obtained by one method are utilised to develop another method (Creswell, 2014; Grix, 2004).

According to Baabereyir (2009) and Mason (2002), the term ‘in-depth’ usually refers to a more open-ended approach to qualitative interviewing, whereby information is gathered through semi-structured or loosely structured forms of interviewing.

Qualitative, or semi-structured interviewing is the method most closely concerned with exploring interviewees’ perceptions (Mason 2002). Bauer and Gaskell (2000) state that semi-structured interviews are carried out to develop a fine-textured understanding of interviewees’ beliefs, attitudes, values and motivation, and the ways in which these qualities are influenced by their particular social context.

The content analysis uncovered some information about the re-use of materials that provided an impetus for refining the approach to design a coherent set of questions for the semi-structured interviews. This is elaborated on in the section below.

4.4.4.1 Interview Questions

Firstly, the content analysis indicated that retailers, manufacturers and TSOs consider unsold stock suitable for re-use, and donate this stock to TSOs or local charities. They may see this as a positive step towards re-use behaviour. This method of ‘waste management’ is not mentioned in the academic literature, and is not a distinct category in the waste hierarchy. This influenced the formation of questions towards discovering how the relevant organisations view this method of ‘re-use’, and where they place it on the waste hierarchy (Table 4.5).

Since ‘other organisations’ from the content analysis (namely the construction and waste services sectors) do not engage with unsold stock (as opposed to *unused* materials, which have been bought for a specific purpose but then remain unused), it is not possible to question their attitudes to this process of donating stock. Therefore, the questions assessing their attitudes towards re-use behaviour were redrafted, in order to be more pertinent to the sector, their processes, and ways of working (Table 4.6).

Secondly, the content analysis showed that TSOs are pro-active stakeholders that collaborate with corporations in carrying out re-use activities. Analysis of the complexities of the interactions of TSOs is presented in the literature on re-use, which indicates that TSOs actively promote re-use at the household-level, in collaboration with local authorities (Chapter 2). In view of this finding, the questions were focused on

uncovering the nature of the interactions between TSOs and corporations, and, in particular, exploring how these vanguard corporations reach the decision to form a partnership with specific organisations, and whether this is seen as a profitable (and therefore potentially long-term) relationship.

The discovery that local authorities are seen as facilitators of re-use behaviour at the household-level led to a focus within questions on the role of local authorities in re-use behaviour at the organisational level, and how they are viewed by TSOs and corporations.

Finally, the content analysis indicated that recycling and recovery are the dominant waste management practices, with re-use of materials limited to some pilot studies and examples. This poses challenges to the attempt to interpret the understanding of re-use behaviour within the sample corporations. These raised further questions regarding the specific drivers for re-use behaviour at this level, and whether these corporations, which are regarded by WRAP 2012–13 case studies as the vanguard, are motivated by external or internal factors and whether they consider re-use to be a sustainable and profitable behaviour. Thus, there was a need for questions directly focused on re-use, addressing longevity, accessibility, drive, and socio-economic profitability.

In light of the content analysis findings and the varied nature of organisations involved in this study, the questions were separated out into two formats: one for organisations with unsold stock (retailers, manufacturers, and TSOs – which are the main collaborators for re-use activities) and another for organisations without unsold stock (construction, waste services). Table 4.5 and Table 4.6 below show the final questions for the semi-structured interviews.

Table 4.5: Format for organisations with unsold stock

Categories	Variables	Questions	Research questions
High means control	Waste hierarchy and/or zero waste to landfill	**1.** Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How? **2.** The government definition of re-use is '*buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed)*'. Does that match your definition? What is the specific understanding of re-use? **3.** How important is the role of local authorities in terms of managing re-use at your organisation? **4.** The government is silent on the issue of unsold stock/materials. How do you classify it? Where would you place it in the waste hierarchy?	Research question 1
High attractiveness	Internal and external feedback for changes in system	**5.** The research shows that change in an organisation takes place at any or every level. Can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation?	
	Comparative analysis with competitors	**6.** Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.	
High credibility	Achievements	**7.** In your sustainability report, you have indicated a substantial achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?	Research question 2
	Guidelines	**8.** It must be incredibly difficult to predict how much stock you are going to sell. Clearly, you want to reduce the waste: **a.** Is unsold stock part of policy? **b.** How far do you deal with unsold stock? **c.** Is it important whether it goes to re-use chain or not? Why? **d.** What happens to that stock? Do you have targets against which you measure for unsold stock? Please elaborate. **e.** Are those targets working? How do you review those targets? **f.** Do you have it written up as a case study? Please elaborate.	
	Innovations	**9.** Operational re-use materials / materials from renovation/refurbishment or moving such as building materials, furniture, fixture etc.: **a.** Does waste policy apply to them? Please elaborate. **b.** How is such non-core business materials/waste dealt with?	
Engagement / Action	Economic and Non-economic benefits	**10.** What is the inspiration behind re-use initiatives and collaboration with TSOs? **11.** How optimal is the collaboration with TSOs? Do you consider it a long-term partnership? **a.** If yes, what makes you wish to do more? Do you consider getting in partnership with other such organisations? **b.** If no, why not and what would help you to do more?	
Behavioural Maintenance	Supply chain pre-assessment	**12.** What do you look for in an organisation to consider it as a potential re-use partner?	Research question 3
	Regular monitoring	**13.** What factors determine the level at which you interact with the TSO? Is there room to do more? **14.** Is re-use considered a long-term practice within your organisation? **a.** If yes, how do you maintain it? **b.** If no, can you elaborate?	
Avoidance of Value Action Gap	Diversity, guidelines and Engagement/ action	**15.** Any message for third sector organisations (TSOs) or corporations in general? **16.** Are there any misperceptions or value action gaps in regards to handling re-use? How is this dealt with within your organisation and supply chain?	

Table 4.6: Format for organisations without unsold stock

Categories	Variables	Questions	Research questions
High means control	Waste hierarchy and/or zero waste to landfill	**1.** Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How? **2.** The government definition of re-use is '*any operation by which products or components that are not waste are used again for the same purpose for which they were conceived*'. Does that match your definition? What is the specific understanding of re-use? **3.** How important is the role of local authorities in terms of managing re-use at your organisation?	Research question 1
High attractiveness	Internal and external feedback for changes in system	**4.** The research shows that change in an organisation takes place at any or every level. Can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation?	
	Comparative analysis with competitors	5. Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.	
High credibility	Achievements Guidelines Innovations	**6.** In your sustainability report, you have indicated a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?	Research question 2
Engagement / Action	Economic and Non-economic benefits	**7.** What is the inspiration behind re-use initiatives and collaboration with TSOs? **8.** How optimal is the collaboration with TSOs? Do you consider it a long-term partnership? **a.** If yes, what makes you to wish to do more? Do you consider forming partnerships with other such organisations? **b.** If no, why not and what would help you to do more?	
Behavioural Maintenance	Supply chain pre-assessment	**9.** What do you look for in an organisation to consider it as a potential re-use partner?	Research question 3
	Regular monitoring	**10.** What factors determine the level at which you interact with the TSO? Is there room to do more? **11.** Is re-use considered a long-term practice within your organisation? **a.** If yes, how do you maintain it? **b.** If no, can you elaborate?	
Avoidance of Value Action Gap	Diversity, guidelines and Engagement/ action	**12.** Any message for third sector organisations (TSOs) or corporations in general? **13.** Are there any misperceptions or value action gaps in regards to handling re-use? How is this dealt with within your organisation and supply chain?	

The following factors were considered in formulating the aforementioned interview questions.

Firstly, having established the viability of CEBA in the content analysis, in order to maintain coherency and consistency and produce rich findings that were relevant to the focus of the study, the semi-structured interview questions were linked to the pro-environmental framework (CEBA). This linkage was intended to allow the overarching research questions to be answered within the framework setting. This also offered the opportunity to explore the framework's potential for further use, to facilitate an in-depth analysis.

Secondly, the finalised interview questions were of two kinds: leading (probing and quote-research) (Fielding, 1993; Folkestad, 2008) and open-ended. The latter was necessary for an in-depth understanding of the interviewees' beliefs, attitudes, values and

motivation towards re-use of materials, and the ways in which these qualities are influenced by their particular organisational context. The former was essential because, in addition to re-use being an underexplored environmental asset, this study's aims seemed liable to render conflicting, and potentially even contradictory, findings; and the long-term economic benefit of re-use among the vanguard organisations has yet to be explored. Furthermore, the content analysis indicated a paucity of evidence of re-use, with recycling, recovery, and disposal as the most common practices. Therefore, assuming that the currently dominant approaches to waste management could easily deviate interviewees' focus, the interview questions were developed with probes to initiate discussion of re-use and keep interviewees on track, so that the overarching research questions were addressed.

Thus, the combination of open-ended and probing enabled to reveal the normative activity within the organisations, and also mitigated the potential disadvantage of vague responses. The next section elaborates on the process whereby the semi-structured interviews were carried out.

4.4.4.2 Process: The Planning and Preparation

Qualitative interviewing literature (Arksey and Knight, 1999; Cochrane 1998; Hughes, 1999) defines the interview as either a speech event (Mischler, 1986) or a social interaction, focused on the activities of questioning and listening on the part of the researcher, and answering on the part of the respondent (Kvale, 1996). Qualitative interviewing can also be defined as a guided conversation (Lofland and Lofland, 1995).

Nonetheless, Hogwood and Gunn (1984) indicate that observed behaviour and stated intentions in interviews can be difficult to reconcile, for a number of reasons. These include inaccurate representation of motive on the part of the interviewee, forgotten intentions, or coping behaviour in response to events. A qualitative interview is an encounter between people of different social situations, with different agendas and varying personal characteristics. Thus, to carry out a successful interview it is necessary to establish and maintain a rapport.

The use of an audio recording device is best practice, because it assists the researcher's independence (Lofland and Lofland, 1995). Hands (2009) explains that the researcher's independence is crucial: the intensive nature of qualitative techniques can immerse the researcher in the object of the study, which can mean that a relationship of dependence forms that leads the researcher to lose sight of the relative objectivity of the original

research focus. Audio recording can help in mitigating the loss by enabling the researcher to go back and listen to the interview. Therefore, in this study, with participants' consent, the face-to-face and telephone interviews were recorded, and in situations where participants were not available for interviews in these forms, they were given the option of semi-structured email interviewing, in which interactions were carried out via multiple email exchanges.

This research acknowledges the difference between face-to-face, telephone, and email interviewing and recognises that face-to-face interviews are normally preferred for qualitative interviewing (Novick, 2008). Thus, face-to-face interviews were given priority over other modes. Nevertheless, because of time and resource constraints, and based on participants' availability and convenience, they were offered all three options.

Applying such a mixed-mode form of interview strategy is considered a viable option by Meho (2006). He notes that mixed-mode interviewing is quick, convenient and inexpensive, and can generate high-quality data when handled carefully. He further argues that when time or resource constraints or geographical boundaries are barriers to an investigation, a mixed-mode interviewing strategy should always be considered, with semi-structured email interviews a viable alternative to face-to-face and telephone interviews. Novick (2008) indicates that online interviewing is seen as cutting edge, as it offers unprecedented opportunities to conduct qualitative interviews and develop meaningful relationships with participants.

Irvine (2011) states that telephone interviews are typically shorter than face-to-face interviews. He also emphasises that in telephone interviews, the researcher tends to 'hold the floor' for longer than the interviewee. Therefore, in this study the telephonic interviewees were provided with relatively less elaboration of the themes, and probing and quote-research was only used as required, thereby reducing the proportion of researcher speaking-time. Another advantage of the use of telephone interviews to enrich the interview process in this research was that telephone interviewees tend to feel relaxed. Therefore, they are able to provide in-depth information and evidence, and high-quality data (Irvine, 2011).

Appendix IV, Section 9.4.2, Box 9.6 and Box 9.7 provide two telephone interview transcripts, from which it is evident that the telephone interviews were shorter than the face-to-face ones. Nevertheless, the transcripts show that the researcher spoke for a smaller proportion of time, which enabled relevant in-depth information to be gathered from the interviewees while keeping the conversation relaxed.

Because the interviews were recorded, either in audio (face-to-face and telephonic) or text formats (email), to avoid human error and maintain consistency, the Nvivo tool was used to organise the gathered information in a systematic manner. The steps followed in gathering and organising the interviews using Nvivo 10 are explained in Appendix II, Section 9.2.1, Box 9.2.

With software such as Nvivo, transcription is no longer a necessity (Gilbert, 2010). Nonetheless, Appendix IV, Section 9.4.3, Box 9.3–9.9 provides examples of face-to-face, telephone and email interview transcripts providing evidence of high-quality data.

Audio-coding in Nvivo enabled the semi-structured interview analysis to move swiftly between codes and audio-excerpts, thereby helping me to remain close to the original data. Nevertheless, there are practical challenges to using audio data over transcripts, since the former can feel less tangible, and it can be harder to review and locate particular utterances (Gilbert, 2010). This issue was addressed by re-listening to the excerpts coded under each node, which enabled audio-excerpts to be appropriately annotated and avoided the danger of half-transcription.

The audio-coding process also made it possible to capture every word spoken by interviewees. Audio-coding brings the sensory aspects of the data into closer focus, enabling

> the researcher to think analytically about the data while being immersed in the flow of the recorded interview, attending to utterances, silences, emotions and the interactive dialectic between interviewer and interviewee in ways that are difficult when reading even detailed transcriptions. The phenomenon of sub-vocalization – when we hear in our minds the words we read – might play a part in bringing us back to that interview, that house, that day etc., assuming we were there in the first place. However, this may not be as effective as hearing the recorded voices all over again while engaged in analytical reflection rather than transcription or transcript checking. (Gilbert, 2010, p.3)

Using Nvivo allowed engaging analytically with the interview data in ways that led me to reconsider and question the often taken-for-granted necessity of transcription (Gilbert, 2010).

In this investigation, the research uses a mixed-methods approach in a sequential manner, whereby the findings provided by the content analysis are utilised to develop the semi-structured interview questions (Creswell, 2014; Grix, 2004). Therefore, to maintain

consistency, at this initial stage organisations contacted included those from the content analysis study to carry out the semi-structured interviews. Following the semi-structured interviews, the interviewed organisations' re-use supply chains were contacted via snowball sampling, which involves the referral of individuals who are of research interest (Arcury and Quandt, 1999; Biernacki and Waldorf, 1981; Browne, 2005; DSE, 2015; Trotter, 2012).

Within the chosen organisations, waste management and sustainability experts were selected to reflect on the lack of awareness of re-use that was identified in the content analysis study. According to Arcury and Quandt (1999), this form of selection is known as expert sampling. This served well for the research investigation because, according to Trochim (2006), expert sampling is not limited to only eliciting the views of people with specific expertise, but also provides the validity of using another sampling approach (in this case, snowball sampling).

Making a decision to limit the sample was based on the representativeness of the sample and data saturation (Biernacki and Waldorf, 1981). Nevertheless, there is a risk of misrepresentation with snowball sampling, as corporations might have referred to organisations in their re-use supply chains that hold similar opinions to them or portray them in a positive manner. This potential imbalance may to some extent be offset by the fact that re-use of materials at this level is an underexplored area of study (Chapter 2), which could have enabled companies to be honest about the challenges they face as they explore a range of mechanisms (Robson, 2000).

Together, expert and snowball sampling helped to generate an overall perspective on re-use behaviour by producing data from organisations and their re-use supply chains (Chapter 6). These selections were carried out as detailed below.

I made initial contact with organisations from the content analysis via telephone or email to obtain the contact details of the most appropriate person to invite for the semi-structured interviews. Telephone conversations or emails requesting these contact details were phrased thus:

> I am a third year PhD student at Kingston University and as part of my research, I would like to make the request to interview the sustainability manager or sustainability experts about re-use. I would be grateful if you could indicate and provide contact details of the best person to arrange an interview with. I would like to send a letter with details of the invitation by the end of this month.

Three-quarters (n = 27) of the organisations from the content analysis subsequently provided contact details of the appropriate person to invite for a semi-structured interview.

The next step was to contact these experts in writing. Appendix IV (Section 9.4.1) provides the format of the invitation letter that was emailed or posted. I followed-up with experts who did respond by providing the options of modes for interviews.

Out of 27 experts, 10 agreed to participate in a semi-structured interview. A one-hour interview was then scheduled, based on the interviewee's availability.

Interviewing the 10 participants generated the initial data. This was considered insufficient for a holistic analysis of re-use behaviour, as data saturation was not reached (Townsend, 2013). Consequently, using the snowball sampling technique, the participants were asked to provide contact details from their re-use supply chains, which they all did. Furthermore, to cover the full range of sectors in interviews, I invited some competitors that were mentioned in the initial interviews. In total, as part of the process of snowball sampling, 12 additional organisations (including some competitors) were contacted, and 9 agreed to take part in semi-structured interviews.

A similar timeframe of up to an hour per interview was allocated, and interviews were conducted either face-to-face, via telephone or via email. In total, 19 interviews were conducted, of which eight were face-to-face, four telephone, and the remaining seven were via email. As a follow-up, each of the 19 interviews was summarised, and the summary was sent to the relevant interviewee for them to reflect on the way their responses had been recorded and to verify their results. In all cases, the interviewees confirmed their responses and their willingness for the results to be used for further analysis. This is important as it adds veracity to the work.

The process of interviewing people from 19 organisations and receiving consent was carried out over four months, from November 2014 to March 2015. However, the overall process of preparation, planning, execution, and feedback lasted for a year, from August 2014 to August 2015.

Table 4.7 below provides a list of the organisations from which interviewees were selected, with the designated positions of the participants. Organisation names are represented by codes to respect the participants' anonymity and to cross-reference with the content analysis list of organisations (Table 4.3) where applicable.

Table 4.7: Semi-structured interview participants

Sectors	Organisations	Participant's Role
Retailer	R0	Group Manager Waste and Water Resource
Retailer	R1	Senior Director for Sustainable Business
Retailer	R2	Sustainability Specialist
Retailer	R3	Store Sustainability Lead
Retailer	R4	Head of Sustainable Business
Construction	C1	Head of Sustainability
Construction	C5	Sustainability Manager
Waste Services	W1	Head of CSR
Waste Services	W2	Communications Manager
Manufacturer	M1	Environment Specialist
Manufacturer	M10	National Account Manager
Third Sector	T1	Corporate Relationship Manager
Third Sector	T5	Managing Director
Third Sector	T6	CEO
Third Sector	T7	Sustainable Business Manager
Third Sector	T8	CEO, Project Lead and Environment Manager
Third Sector	T9	Business Manager
Third Sector	T10	Managing Director
Third Sector	T11	Operations Manager

4.4.4.3 Process: The Interviews

The face-to-face interviews were always held in a location that was convenient for the participant, and where disturbances were minimised, usually the participant's workplace. I dressed in smart casual clothes suitable for the office environment. The interview process is described next.

Goffman (1981) suggests a four-part structure for semi-structured interviews. The initial section constitutes greetings and introductions, which are particularly important for creating a positive first impression. At this point, the extent to which participants identified a shared interest in the area of research became apparent, and they often directly questioned me about my link with the study (Beaverstock and Boardwell, 2000).

I always responded to this by saying that I was conducting independent research for doctoral studies at Kingston University, was a local resident, and had worked in the waste sector in academia, a charity, a local authority and the construction industry. Interviews identified their own commonalities with my response in varying ways and to different degrees. I made conscious efforts to foster a rapport by engaging with the interviewee in a positive way and responding to any areas of commonality or shared interest.

During the first section of the interview, participants were reminded of the aim of the research and the confidentiality of all responses. Participants were given the options of designating their comments for use as attributed quotations or anonymous quotations. Their permission to audio record the interview was then asked, they were given an

overview of how the interview would proceed, and asked to verify timings and their agreement to proceed.

The second section was the interview itself. This is the area which requires the most advanced preparation and planning. As Bauer and Gaskell observe, 'behind the apparently natural and almost casual conversation seen in the successful interview is a well-prepared interviewer' (2000, p.40).The interviewees were reminded of the purpose of this study, which is investigating re-use behaviour among corporations and their supply chain. For three months, prior to the actual interviews (August–November 2014) I carried out continuous discussions with my research supervisors to develop skills for interviewing. I also referred to the practices indicated by Mason (2002) in her study on qualitative research: listening; remembering what has been said and what has already been asked; achieving a good balance between listening and talking; using careful observations to pick out the relevant social situation, including verbal and non-verbal cues; and accomplishing the practical tasks associated with interviewing, such as note-taking and recording.

At the start of each interview, participants were asked about their knowledge and understanding of re-use within the waste hierarchy, which would inform the subsequent discussion. Next, questions were asked about re-use practices and behaviour within their organisation and their re-use supply chain. This was to gather information and gain an understanding of the mechanisms and challenges interviewees faced regarding re-use practices within their organisations. Bryman (2004, p.151) calls this type of question 'informant factual questions' because they provide answers specific to the various ways of working within the organisations.

Notably, since these were semi-structured interviews, primarily open-ended questions were used to encourage participants to talk freely and in their own words, which could reveal some of the values and beliefs informing their role. Nonetheless, Tables 4.6 and 4.7 indicate some questions that could be considered as leading the participants, which were designed to probe participants wherever applicable.

The combination of open-ended, probing and quote-research techniques mitigated the disadvantage of purely open questions. One of these disadvantages was that some participants spoke at length about recycling or recovery, without necessarily providing any more information on re-use than some of those who were more concise, due to their deeper understanding of the issues. In this respect, by using probing and quote-research, it was then possible to ask about their perception of the government's definition of re-use,

in order to analyse their understanding of re-use. Devine and Heath (2004, p.151) indicate that this process ensures that interviews remain open and flexible, thereby 'allowing the informants to elaborate on their values and attitudes and account for their behaviour'. However, the variability in responses helped to reveal the normative activity within the organisations and therefore, such vague responses served to provide me with an understanding of the organisations' limited comprehension of re-use activities.

As discussed above, the use of semi-structured interviews avoided the imposition of structures, allowing participants to report in their terms and give their perspectives and stories, revealing their personal understanding of re-use. Furthermore, the reflexive and flexible approach to the interviewing made for natural interaction with the participants, facilitating both the building of a rapport and the revealing of a variety of information through probing and quote-research. In most cases, there was no set order to the discussions, except in a few instances where factual interview questions (quote-research) were posed to initiate the discussion or bring it back on track if required.

The third section comprises the time after the interview, which involves debriefing, to find interesting information that might be obtained by going 'off the record' (Kvale 1996, p.128). This allowed another opportunity to reassure interviewees about anonymity and the use of the information purely for academic purposes, which cemented the formation of a positive rapport and made the revelation of further information more likely.

The last section of the semi-structured interview concerns leave-taking. This is also crucial, since if done well, it makes the opportunity of a further visit more likely, which can be required for the clarification of certain issues (Miller and Dingwall, 1997).

Subsequently, in order to verify the participants' perspectives, summaries of the interviews were sent to participants to receive approval for use for the analysis. On receipt of the final approvals, the interviews were critically analysed, which is extensively discussed in Chapter 6.

Overall, the semi-structured interviews revealed the participants' perspectives, and the results confirmed the existing ambiguity in perceptions about re-use at the vanguard organisational level. The analysis of the semi-structured interviews further enabled the development of collaborative re-use models that represent the complexity of facilitating re-use activities for reducing waste production, while maintaining economic returns, at the organisational level.

4.4.5 The Final Stage: Evaluation

As part of evaluation, some of the participants were revisited to obtain their views on applying the processes mentioned in the collaborative re-use models in real-life situations. Thus, a proper leave-taking during the semi-structured interviews aided in carrying out the final evaluation.

The collaborative re-use models and the process and findings of the evaluation are elaborated in Chapter 7.

4.5 SUMMARY

Together, the content analysis and semi-structured interviews used in this study provide a picture of the factors facilitating and preventing the re-use of materials from becoming normal practice in those organisations that are identified as being in the vanguard of moving up the waste hierarchy by the WRAP 2012 and 2013 business case studies.

Furthermore, the empirical work offers some examples of re-use and ongoing practices, which can form a baseline for sharing information between organisations. Moreover, placing the gathered data from both methods within the theoretical construct (CEBA) and carrying out this whole investigation in a sequential manner, assisted in making the results cohesive and consistent, thus mitigating the heterogeneity of the data.

In practical terms, the mixed-methods approach involved analysis from the researcher's perspective, followed by responses from the participants' perspective, by using the different data collection methods described above (Bryman, 2004). The mixed-methods approach was adopted to avoid anecdotal data and the potential for making false assumptions, because of the lack of literature on re-use at the organisational level.

This approach enabled both qualitative and quantitative data to be used for the study, thereby ensuring the most holistic approach. The information was then analysed, evaluated and synthesised in order to fully answer the overarching research questions. Evaluation involved revisiting five organisations from the semi-structured interviews to receive validation of the collaborative re-use models (these were reviewed post evaluation), while synthesis involved cross-referencing the findings with the literature.

In exploring the factors facilitating and preventing the re-use of materials from becoming normal practice, this thesis summarised that collaboration can be a viable mechanism for maintaining a balance between environmental and economic value. That is, it can assist

corporations to reduce their waste and consumption levels, while not inhibiting the achievement of their goal of making a profit.

Chapters 5 and 6 lay out an empirical representation of the mixed-methods approach and discuss the key themes in association with the theoretical construct (CEBA).

Finally, Chapters 7 and 8 detail findings and discuss them, and specify the perception and understanding of re-use by organisations, explaining the barriers to incorporating re-use as a normal practice.

4.6 ETHICAL ISSUES

Ethical approval for the empirical work was sought and granted by the university in accordance with their standard protocols.

Informed consent, access and acceptance, and confidentiality and anonymity are the ethical issues addressed in the course of this research. For this purpose, Robson's (1993) guidance is useful.

With regard to consent, Robson advises that 'whenever possible, the investigator should inform all participants of the objectives of the investigation and all aspects of the research or intervention that might reasonably be expected to influence willingness to participate' (1993, p.471). In this study, the participants were informed about the purpose of the study and made aware that participation was optional and that they were free to answer or refuse to answer any questions over the course of the interview.

Another ethical issue, closely related to consent, is access and acceptance. This involved obtaining permission from the participants to carry out the interviews and evaluation in their workplaces. Access and acceptance involved their allowing me into a given physical space and also permitting me to conduct the investigation in a particular manner (Homan, 2002). In all cases, approval and consent were obtained before visiting.

The third ethical issue, confidentiality and anonymity, is also addressed in this study. In recognition of the ethical requirement that information obtained from, or about, a participant during research should be treated confidentially, it is duly noted that none of the information provided by interviewees during this study has been disclosed to other people with their identity.

To preserve anonymity within the data gathered from participants and their reports, throughout this research they are referred to using anonymising codes. In this way, it

becomes nearly impossible to trace any information and identification to a particular participant.

4.7 METHODS LIMITATIONS

The approach and methods discussed above are open to criticisms. Establishing methodological rigour when using a mixed-methods approach is not straightforward, because of the combination of quantitative and qualitative procedures. To minimise the impact of criticism on the research findings, the criteria of reliability, credibility, and transferability are applied (Lincoln and Guba, 1985).

Reliability refers to the consistency of the results with similar contexts, and conditions. For instance, instrument reliability is maintained in selecting the organisations in the content analysis study through use of the WRAP best practice business case studies, which ensures the selection of a range of organisations, all exhibiting similar features in terms of being probable leaders in the field of waste management. When selecting participants for semi-structured interviews, reliability was maintained through the use of expert sampling and snowball sampling. This is important because any set of results needs careful analysis and comparison to ensure reliability, and the use of experts is essential in this process. Furthermore, participants were clearly informed about the purpose of the study before the interview to help improve reliability.

Reliability and transferability of research findings are closely related in the sense that transferability through replication could enable me to test reliability. In this research, the results themselves cannot be replicated; however, the process can indeed be repeated in the future as an approach to other pro-environmental studies.

Finally, validity is a key element of a research investigation (Marshall and Rossman, 2011). By receiving feedback regarding the summarised interpretation of their interviews, participants were able to reflect on their responses and indicate either that they agreed with them as they stood, or that they wanted to revise them. According to Cho and Trent (2006), this provides a vital means of validation.

As the participants are kept anonymous throughout this research, this improves the study's overall validity by ensuring that participants were able to be honest in their responses, without fearing any negative reflections on their organisation. Furthermore, the research process, methods, and findings have also received validation through publications as mentioned in Chapter 1, Section 1.4.

4.8 CONCLUSION

The heterogeneous (and potentially contradictory) nature of this research investigation on re-use behaviour among corporations and their re-use supply chains led to the selection of mixed-methods approach as the most appropriate choice. In this investigation, content analysis followed by semi-structured interviews was judged an appropriate approach to achieve the aims of the research. The chosen methods complement the pro-environmental framework (CEBA), which is used as an analytical tool to investigate factors facilitating and preventing the re-use of materials from becoming normal practice among vanguard organisations in the UK. The following Chapters 5 and 6 elaborate the findings of each method.

5. CHAPTER FIVE: CONTENT ANALYSIS OF ORGANISATIONS

5.1 INTRODUCTION

Chapter 5 provides the findings of the initial pilot study and the first part of the empirical work, namely the content analysis study. Figure 5.1 presents a schematic illustration of this chapter.

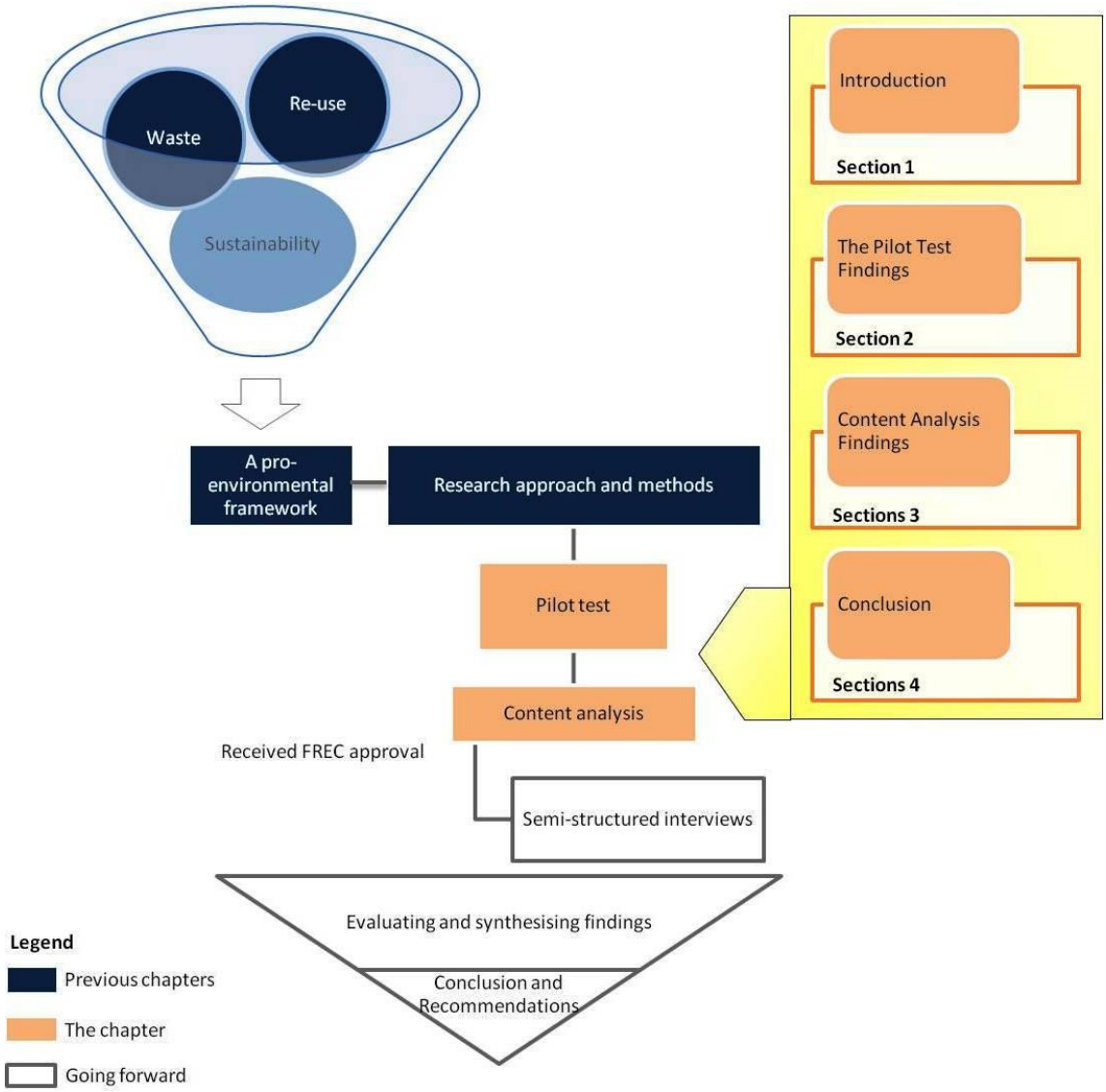


Figure 5.1: The content analysis chapter

5.2 THE PILOT STUDY FINDINGS

The purpose of this pilot study was to familiarise myself with the process of identifying the leading organisations' evidence regarding their progress towards re-use behaviour. This section presents the findings of the pilot study of five organisations by analysing their reports. It has previously been published as Tavri *et al.* (2014).

The organisations for this pilot study were selected using the search tool on the WRAP website (www.wrap.org.uk) for business case studies from 2012 and 2013. The first five results from the search were selected for inclusion. Two of the five were mixed retailers, one was a food retailer, and the remaining two were a construction company and a third sector organisation (TSO). One of the mixed retailers is referred to as 'self-proclaimed', because in their communication plan, they claim to be the best at moving up the waste hierarchy.

The CEBA framework (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap) was used as an analytical tool to conduct the pilot study (see Chapters 3 and 4).

5.2.1 Document Analysis

The analysis of textual information was carried out using a simple three-point Likert-scale (see Table 4.2). The analysis and scoring of the information gathered from the organisational reports followed the process shown in Table 5.1 below. The gathered datasets from the organisational reports were scored 3, 2, or 1 by aligning them with CEBA categories and variables.

This pilot study indicated that the analysis of such publicly available information by using CEBA as an analytical tool confirmed the validity of the framework and its suitability for a wider application to other organisations that are attempting to be leaders in the field of waste management.

Table 5.1: Scoring process

Categories (CEBA)	**Likert-scale / Variables**	**3**	**2**	**1**
Communication: high means control	Waste hierarchy and zero waste to landfill policy	Waste hierarchy and/or zero waste to landfill	Not applicable (for the purpose of this study)	No waste hierarchy and no zero waste to landfill
Communication: high attractiveness	Feedback	Both internal and external feedback	Either internal or external	No feedback
	Comparative analysis	Comparative analysis with competitors	Supply chain comparative analysis	No analysis with competitors
Communication: high credibility	Achievements	Achievement and its comparison to the previous year	Achievement but no evidence of comparing to the previous year	No evidence of achievement
	Guidelines	Guidelines in place for internal and supply chain	Guidelines in place for internal	No guidelines
	Innovations	Innovation internal and supply chain	Innovation internal	No innovation
Engagement/ action	Benefits (Economic and non-economic)	Either economic or non-economic benefits to both organisation and supply chain	Either economic or non-economic benefits the organisation only	No benefits
Behavioural maintenance	Measuring	Measuring supply chain and internal	Measuring supply chain	No measuring
	Regular monitoring	Monitoring internal and external	Monitoring internal	No monitoring
Avoidance of the value action gap	Diversity	Diversity internal and supply chain	Diversity internal	No diversity
	Guidelines	Guidelines in place for internal and supply chain	Guidelines in place for internal	No guidelines
	Engagement/ action	Either economic or non-economic benefits to both organisation and supply chain	Either economic or non-economic benefits the organisation only	No benefits

Table 5.2 below provides the overall scoring of the organisations' approaches to re-use as revealed through their public documentation. The final score was obtained by averaging the scores of individual variables.

Final scoring showed the mixed retailer achieving the highest score of 5, whereas the self-proclaimed mixed retailer scored the lowest.

Table 5.2: Scoring

Organisation-type	Categories (CEBA)	High means control	High attractiveness	High credibility	Communication	Engagement/ action	Behavioural maintenance	Avoidance of the value action gap
Mixed retailer		3	2	3	**3**	**3**	**3**	**3**
Food retailer		3	3	2	**3**	**3**	**2**	**2**
Construction		3	2	2	**2**	**2**	**2**	**2**
Self-proclaimed mixed retailer		3	1	3	**2**	**1**	**1**	**2**
TSO		3	1	3	**2**	**2**	**3**	**2**

Each category was scored by capturing information from reports on waste management activities and matching them with the variables of CEBA. Since there is no generic way of producing reports, every organisation has their own approach to communicating such information. Therefore, this research carried out detailed review of the reports, both the written text and the graphical representation or pictures.

The adaptation of the Likert-scale reflects the way the scale was used flexibly and sensitively. In some cases it was necessary to account for quite granular gradations in the variables under consideration. In others, the variation was more stark, showing a either a positive or negative judgement, as with high means control. This was because during the interpretation and translation of qualitative information into a score, the number of occurrences of a piece of evidence or the depth of information was not considered. Rather, the scores were based on whether the evidence was present or not. Because the main priority at this point was to analyse and identify the organisations' attitudes towards re-use, the material judged to be initially useful for gauging these attitudes was the information and evidence they themselves present regarding these aspects of waste management. Therefore, reference (or the lack thereof) to various aspects of waste management was taken as an indication of the organisations' awareness of certain approaches to waste management that provided a reflection of their attitude.

For example, in the case of high means control, the information that was gathered from the reports provided evidence regarding the extent to which organisations possess and implement their potential knowledge concerning the waste hierarchy and the zero waste to landfill. This is highlighted in Section 3.5.1.1 as the elements to measure the compliance in this research.

The organisational reports that mention the waste hierarchy (prevention, preparing for re-use or re-use, recycling, recovery and disposal; or reduce, re-use, recycle) and the zero waste to landfill scored 3, reflecting their awareness of waste management strategies and relevant compliance measures. At the other extreme, the organisational reports that did not provide any evidence of awareness of either the waste hierarchy or of the zero waste to landfill scored 1. The purpose was to establish the extent to which organisations were aware of high means control – essentially their awareness of waste compliance. Therefore, the score of 2 points remains 'not applicable', and scores of either 3 or 1 suited this variable well.

5.2.2 Findings

5.2.2.1 Communication Category

As the selection of organisations was from the WRAP business case studies, it was expected that they would all score 3 for high means control, and this proved to be the case, reflecting that they were following waste strategies, moving up the waste hierarchy and driving towards zero waste to landfill. Mixed retailers, construction, and the TSO reports provided evidence of following the 'UK waste hierarchy', and the food retailer and self-proclaimed mixed retailer provided evidence of having zero waste to landfill embedded within their organisational policies.

The scoring for high attractiveness was done on two variables (see Section 3.5.1.2), which were averaged to form the final score. The first variable was 'feedback'. Organisations were given a score of 3 when the information in their report indicated that they gathered feedback from *both* internal and external stakeholders, 2 when the information involved gathering feedback from *either* internal *or* external stakeholders, and 1 if there was *no* feedback system in place.

The food retailer, mixed retailer, and the construction organisation scored 3 because their sustainability reports provided evidence of implementing both internal and external feedback systems. The food retailer's report indicates that it 'regularly takes an external and internal perspective on performance', while the mixed retailer's report indicates that it conducts 'collective work through online surveys [both internal and external] to [adapt to] changing needs'. The construction company's report indicates 'engaging with employees through Roadshows and feedbacks, customers through satisfaction surveys and the community through the Considerate Constructors Scheme'. However, the self-proclaimed mixed retailer and the TSO scored 1, as their reports did not provide any evidence of having a feedback system in place.

The second variable of high attractiveness is ‘comparative analysis’. This involves giving a score of 3 to the organisations that provided evidence of comparing their performance with competitors, 2 if they compared their supply chain with their competitors, but there was no comparison with competitors, and 1 for organisations that did not provide any evidence of comparison. Within this category, the food retailer was the only one that provided evidence of comparative analysis, evidenced by the phrase that it ‘compares to competitors’, and thus scored 3. None of the other reports provided any form of comparative analysis, and thus all scored 1.

Subsequently, the final ranking of high attractiveness was reached by averaging out the scores of both variables. The food retailer scored 3, the mixed retailer and the construction company scored 2, and the self-proclaimed mixed retailer and the TSO scored 1 (see Table 5.2). This result identified that the establishment of a feedback system to gather external and internal views on sustainability and waste management, and using competitors’ data to measure waste performance is a way of using peer pressure to enable facilitation of waste management activities among organisations.

An additional example to explain the scoring within the Communication (C) category was the scoring of high credibility. Here, scoring was based on each of the three variables and the average then formed the final score. The first variable was ‘achievements’, for which organisational reports that provided evidence of achievement and a comparison to the previous year scored 3, those that provided evidence of achievement but no evidence of comparison with the previous year scored 2, and those that did not provide any evidence of achievement scored 1. The construction company, the self-proclaimed mixed retailer, and the TSO scored 3 by providing evidence of their respective achievements while indicating some form of comparison with the previous year.

The construction company’s sustainability report indicates that in 2012–13 they achieved re-use of 39.4 per cent, and recycling and recovery of 31.2 per cent, whereby 477 tonnes of waste wood was either re-used or recycled in the 12 months in question. However, disposal also went up by 2.4 per cent. The self-proclaimed mixed retailer’s report indicates a ‘28 per cent reduction in overall waste production and a 32 per cent reduction in food waste since 2008/09’, and the TSO’s annual report indicates that ‘over a year, more than 3.8 million items were swapped, raising £2.3 million’. The mixed retailer and the food retailer scored 2, as their sustainability reports provided evidence of achievements but without any form of comparison with the previous year.

The second variable of high credibility was ‘guidelines’. In this variable, organisations that provide guidelines for both their internal staff and their supply chain scored 3, those that provide guidelines for internal purposes only scored 2, and those providing no evidence of having guidelines scored 1. Like high means control, this is one of the variables where all organisations scored 3, as all of their reports provide evidence of having *waste best practice guidelines* in place.

The third variable of high credibility was ‘innovation’. Organisations providing evidence of implementing innovative waste management schemes within both the organisation and the supply chain scored 3, those doing so only within the organisation scored 2, and those providing no evidence of innovation scored 1. The mixed retailer and the self-proclaimed mixed retailer scored 3, as their sustainability reports provided evidence of introducing innovative re-use schemes for packaging and clothing respectively, in collaboration with their supply chains. The food retailer and the TSO scored 2, having provided evidence of mechanisms to improve their economic benefit and marketing respectively for facilitating waste management, but with no involvement of the supply chain. The construction organisation scored 1, as its sustainability report provided no evidence of any innovative scheme for waste management. After averaging, the self-proclaimed mixed retailer and the TSO scored 3; and the food retailer and the construction company scored 2 (see Table 5.2).

Thus, for high credibility, all the organisational reports show either ‘strong’ or ‘some’ evidence, by scoring either 3 or 2. This shows organisations’ progression towards facilitating waste management activities. Nevertheless, the value of re-use activities in attaining strong sustainability remains to be explored.

In the Communication category, the mixed retailer and the food retailer were the only two that scored 3 overall, with all others scoring 2. Thus, although communicative policies were in place in all the organisations, there were still opportunities for further enhancements regarding their strategies and approaches for collaborating with their respective supply chains.

The scoring system was applied in the same way for the remaining categories within the CEBA framework, Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap (see Table 5.1). The overall scores indicate that, along with Communication, the only category in which every organisation scored at least 2 was in Avoidance of the value action gap (A).

5.2.2.2 Engagement/Action Category

In the category of Engagement/action (E), the highest scoring organisations were the mixed and food retailers, because of their work towards establishing long-term sustainable partnerships with their supply chains. Both of their sustainability reports demonstrated their engaging in a mutually beneficial approach for facilitating waste reduction and re-use. For instance, the mixed retailer's report showed evidence that around 70 per cent of the unsold sofas were re-used by donating more than 190 sofas to the TSO and their members, and the remaining 30 per cent were sent for recycling. The food retailer's report showed the establishment of an ongoing relationship with several TSOs by donating meals and bakery waste for animal bedding.

The organisations scoring 3 provided evidence of gaining an associative strength with the supply chain to deliver both economic and non-economic benefits, although the benefits are demonstrated only by a short series of examples and thus cannot be viewed as having a long-term positive effect. This illustrates the need for further exploration to identify the capacity of re-use activities in achieving strong sustainability.

5.2.2.3 Behaviour Maintenance Category

The mixed retailer and the TSO were judged to be undertaking structured activities by considering internal and external measuring and monitoring as an essential variable, and were thus given a score of 3. Action by the other organisations was assessed as being informal, giving a score of 2. The self-proclaimed mixed retailer report provided no evidence, giving it a score of 1.

5.2.2.4 Avoidance of the Value Action Gap Category

Avoidance of the value action gap involves avoiding a difference between beliefs and actions, through acknowledging diversity, guidelines, and engagement (see Section 3.5.4). This category involves the use of evidence regarding the differences in approaches from one organisation to another. For instance, the mixed retailer's sustainability report provides evidence of diverse employment opportunities, while the self-proclaimed mixed retailer was undertaking diversity actions by involving the community and employees. The food retailer's sustainability report provided evidence of the value action association through its attaining gold accreditation from Investors in People, for its investment in staff diversity. The construction firm and the TSO both created volunteering opportunities aimed at benefitting their staff through engagement and diversity.

The diverse range of approaches demonstrates that all the organisations were engaging in strategies to avoid the value action gap, although not always relating these strategies directly to the area of waste management. Nonetheless, their positive approaches to other means of avoiding the value action gap were interpreted as being indicative of a generally progressive approach, and thus offered some basis for awarding a score of 2, even if the evidence given in the self-reported documents did not necessarily relate directly to waste management. However, only the mixed retailer's sustainability report provided evidence related to waste management strategies, to achieve a score of 3.

5.2.2.5 Discussion

The results show that all these organisations (regarded as being in the vanguard by the WRAP 2012–13 case studies) are making progress towards waste management. However, their normative positioning is yet to be explored. Some of the objectives and strategies towards waste management considered by organisations are in line with behaviour theories that build associative strength. However, to understand their positions entirely, a further analysis was required.

Further, it must be noted that this analysis is tentative, as it is based on only a short series of published documents reporting on various activities, and organisations may have under-reported. Therefore, it was judged crucial to explore the results in a measured and analytical way, acknowledging the potential for a variety of mitigating factors, such as subjectivity, generalisability, and the potential for misrepresentation.

Apropos of the last, it is certainly important to consider the fact that there are many reasons why organisations may not have presented a complete picture, including that the reports were to be made available to external audiences. Therefore, while it would be premature to draw any firm conclusions from this analysis, it does nevertheless indicate that the CEBA pro-environmental framework provides a methodology applicable to a broader sample. Such application would yield more detailed evidence that can provide a baseline for the sharing of information between organisations that are in or attempting to be in the vanguard of moving up the waste hierarchy, as well as helping identify potentially valuable practice examples of re-use.

The analysis also shows that all five organisations are, to a greater or lesser extent and in differing ways, seeking to implement waste management strategies, which provides evidence of the pursuit of associative strength, but not necessarily concerning re-use and its longevity.

The point of a pilot study is to identify potential problems that may have been overlooked in the formulation of the study design, so that appropriate steps can be taken to remedy them before the study itself. In the content analysis, the use of Nvivo potentially led to coder reliability. Furthermore, separating recycling and re-use evidence further enhanced the robustness. This is explored next.

5.3 CONTENT ANALYSIS FINDINGS

The next step in this research was to conduct a study extending the document analysis to a much larger range of organisations, thereby engaging in a full content analysis method. To this end, 36 organisations from the WRAP business case studies of 2012 and 2013 were selected, and their reports were analysed. This part of the research has been presented at national-level conferences (Purohit *et al.*, 2015; Tavri *et al.*, 2015).

Table 4.3 in Chapter 4 provides the coded list of all 36 organisations considered, which includes following sectoral organisations that are defined as follows.

Retailers: According to the UK Standard Industrial Classification (SIC) 2007, the retail trade is defined by the Office for National Statistics (ONS) as:

> all retailing are presented in four retail sector groupings: predominantly food, non-food, non-store retailing, automotive fuel. The non-food sector is further broken down to provide statistics on: non-specialised stores or department stores; textiles, clothing and footwear; household goods stores; other specialised stores. (2014, p.4)

In this research, organisations R0, R1 and R4 were mixed retailers which, under the definition provided above, can be considered non-specialised stores. R2 and R3 are household goods stores, R5 is clothing and footwear, R6, R7, R8, and R9 food retailers, and R10 and R11 specialised in drink retailing.

Construction companies: The Department of Business Innovation and Skills (DBIS) defines the construction sector as comprising the 'construction contracting industry; provision of construction related professional services; and construction related products and materials' (2013, p.v). C1, C2, C3, and C4 are construction organisations.

Waste Service companies: Private operators that are owners and operators of waste treatment facilities are termed waste service providers. Waste services are members of the Environmental Services Association (ESA), formerly known as the National Association of Waste Disposal Contractors (NAWDC) (Holmes, 1983). W1, W2, W3, and W4 are waste service organisations that own and operate waste treatment facilities.

Manufacturers: DBIS defines manufacturing as a sector comprising of a variety of industries as follows:

> food, beverage and tobacco products; textiles and textile products; wood and wood products; pulp, paper and paper products; publishing and printing; coke, petroleum products and nuclear fuel; chemicals, chemical products and man-made fibres; rubber and plastic products; other non-metallic mineral products; basic metals and fabricated metal products; other machinery and equipment; electrical and optical equipment; transport equipment; other manufacturing. (2010, p.1)

In this research, M1, M2, M8, and M9 are textile and textile products manufacturers; M3, M4, M5, and M6 are beverage products manufacturers, and M7 is a transport equipment manufacturer.

TSOs: Charities or TSOs are also known as non-governmental organisations (NGOs) and are a diverse, where organisations share common characteristics. They are non-governmental, value-driven and principally reinvest any financial surplus to further social, environmental, or cultural objectives. TSOs include voluntary and community organisations, charities, social enterprises, cooperatives and mutuals, both large and small (DEFRA, 2013a).

In this research, T1 is a TSO that arose from a global movement of millions of people who share the belief that, in a world rich in resources, poverty is not inevitable. In keeping with this tenet, T1 claims to contribute towards zero waste to landfill by facilitating re-use and redistribution of clothing and footwear.

T2 and T3 are waste and sustainability-focused charities that claim to work towards resource efficiency. T4 claims to save edible food destined for waste and send it to charities and community groups, which then transform it into nutritious meals for vulnerable people.

Finally, O1 is a transport service provider, O2 was a financial service provider, and O3 a health care provider.

Although the UK is predominantly a service sector economy (ONS, 2015a), the selection of organisations from the WRAP database indicates that both the production and the service sectors demonstrate best practice examples in the area of waste management in the UK. However, the WRAP database is limited to case studies only Therefore, it is unclear whether the motivation is limited to recycling and recovery, or whether the organisations have long-term strategies to move up the waste hierarchy towards re-use.

The perceptions about re-use are yet to be explored, and organisational factors and mechanisms for incorporating re-use also remain unknown.

5.3.1 Stage 1: Node Formation and Coding

In Nvivo, the nodes Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap were selected (drawn from CEBA). These were followed by subsidiary nodes, which are the variables or 'lower-level groups' of the CEBA pro-environmental framework (see Section 3.5). The sources were the publicly available reports (sustainability reports, CSR reports and annual reports) from the selected 36 organisations.

This research recognised the need to carry out this content analysis in a careful, methodical, step-by-step manner to avoid missing any crucial information. Such an approach was necessitated by the fact that organisations communicate their policies, achievements and strategies towards waste management in different ways, as evidenced by the pilot study. Therefore, as an initial step, the formation and coding of nodes and subsidiary nodes was done by extracting the particular words and phrases and their synonyms from the organisational reports, and at this stage only presenting whether or not organisations provided any evidence of waste management.

The selection of appropriate synonyms was carried out by reviewing the organisational reports. This initial step provided an overview of the evidence present in the organisational reports and set the benchmark for carrying out the succeeding steps of further analysis and scoring.

The following section describes the formation of each node and the subsidiary nodes and variables, and the way communicative reports were analysed and coded on Nvivo.

5.3.1.1 Communication Node

The Communication node consisted of three subsidiary nodes: high means control, high attractiveness, and high credibility (see Section 3.5.1). The examination led to a search for words or phrases connected to 'waste hierarchy' (prevention, re-use, recycling, recovery, and disposal) and 'zero waste to landfill' to evidence high means control. This is because at the time of this empirical research, no regulatory measures had been set in the UK for facilitating re-use of materials, and these phrases were identified as the most appropriate way to find evidence of organisations' behaviour in moving up the waste hierarchy. Some examples are presented below.

Within the TSOs, the T1 report demonstrated evidence of high means control by indicating their strategy of 'minimising CO_2 emissions by avoiding waste going to landfill'. The T2 report demonstrated part of their sustainability strategy as 'initiatives to reduce, re-use and recycle waste'. The T3 report indicated their focus on 'the diversion of waste from landfill, and considering the full waste hierarchy as defined by DEFRA'. Finally, the T4 report represented their awareness of zero waste to landfill by 'ensuring good food is not wasted'.

Within the construction sector, the C1 report demonstrated their commitment to zero waste to landfill by making it part of their organisational policy, through enhancing the practice of 'minimising waste to landfill'. The C2 report demonstrated their willingness to follow the waste hierarchy by representing their commitment as 'a signatory to the WRAP Half Waste to Landfill initiative'. The C3 report stated that they are 'focussing on waste reduction'. Finally, the C4 report indicated they are 'aiming to use resources efficiently and to minimise waste'.

Within the manufacturing sector, the M1 report represented the manufacturer as 'maximising the efficient use of raw materials by reducing, re-using and recycling'. The M3 report demonstrated a long-term vision by achieving 'zero waste in operations and [a commitment to] recycle'. The M4 report showed their commitment by stating their objective as being 'to send no waste to landfill and to maximise the re-use of waste by moving up the waste hierarchy'. The M5 report indicated their sustainable packaging programme that was based on 'four principles: reduce, re-use, recycle, and rethink'. The M6 report provided evidence by presenting their commitment to 'reduce waste, support 100 percent recycling, zero landfills, and using materials more efficiently'. The M7 report indicated their strategy of 'zero landfill waste and zero incinerated materials'. The M8 report indicated their commitment to zero waste to landfill by stating 'No [core business material] to landfill'. Finally, the M9 report referred to the use of 'the product life cycle to support the re-use or recycling of materials at the highest possible level of quality' as their commitment towards the zero waste to landfill.

A similar type of analysis was conducted on the evidence provided by all the retailers, waste service organisations and other organisations. It demonstrated embedded waste strategies within all organisations except M2, O1 and O2, although this may be an example of underreporting. This could be because of an assumption that, as waste strategies are embedded within legislation, M2, O1, and O2 might have considered them to be factors that are automatically taken into consideration, and therefore that there was no need to be explicit in their reports.

Another subsidiary node of the Communication category is high attractiveness, which Section 3.5.1.4 identifies as consisting in the influence placed on organisations through peer or external pressure. It is sub-divided into two variants that provide evidence of peer and external pressure: 'feedback' and 'comparative analysis'. Using Nvivo word frequency and text search commands, synonyms of 'feedback' and 'comparative analysis' were sought. The synonyms of 'feedback' included: response/responding/respond, consulting, involving, survey, asking questions, interactions, and listening. There follow some examples of information coded from the reports that demonstrate evidence of 'feedback'.

Within the TSOs, the T1 report provided evidence of feedback by indicating 'well-established arrangements for consulting and involving staff in its work', the T3 report indicated 'membership survey' as a method of receiving desirable feedback, and the T4 report indicated evidence by providing figures from the 2012 'National Impact Survey'.

Within the Construction sector, the C1 report indicated using 'employee engagement surveys' to receive feedback, the C2 report cited 'regular customer surveys' as a mechanism for receiving feedback, and the C3 report provided evidence of a 'Global Employee Engagement Survey' and other 'community engagement and consultation procedures' as the evidence of a feedback system.

Within the manufacturing sector, the M1 report indicated a range of activities demonstrating internal and external stakeholder consultation and surveys, the M2 report provided evidence of events and surveys for assessing their environmental impact, and the M3 report indicated 'meeting with employees, customers and suppliers to discuss their goals'. The M4 report presented evidence of a '360-degree feedback [system]', the M5 report demonstrated internal and external feedback on 'waste-sorting and environmental [issues]', and the M7 report indicated the implementation of an 'Environmental Management Survey' to gather feedback from all stakeholders. Finally, the M9 report indicated receiving feedback from customers with regards to the 'quality, performance, environmental impact and…the optimal functionality of their products'.

A similar type of analysis was conducted for all the retailers, waste service organisations and other organisations. The overall analysis demonstrated that all organisations except C4, M6, M8, and T2 showed evidence of having a feedback system in place for gathering feedback on waste management activities.

Another variable within high attractiveness is 'comparative analysis' and the synonyms of 'comparative analysis' included competitors. The following are some of the examples

representing the information extracted from the reports that show evidence of ‘comparative analysis’.

Within the waste service sector, the W2 report specified evidence of comparative analysis by indicating that they ‘benchmark themselves against competitors’, and the W4 report did so by stating that their ‘strategies are different from the main competitors in the UK’.

Within the retailers, the R0 report indicated having better business details and strategies than competitors. The R1, R6, R7, R8, and R9 reports provided evidence of comparative analysis by indicating that they were outperforming their competitors. The R11 report indicated the highest satisfaction rate in comparison to their competitors. However, the R10 report indicated that they are falling behind their competitors.

Here, ‘retailers’ constitute different types of businesses. The fact that the various organisations comprise a variety of business types, and that some of them are ‘mixed retailers’, means that it is easy for businesses to claim that they are outperforming their competitors in certain areas. By using the fairly vague term ‘competitors’, businesses can choose the types of businesses with which they compare themselves, and therefore manipulate the results so that they can claim to be outperforming them. These comparisons are not limited to the area of waste management, but can be seen in comparisons drawn in other areas such as sales and customer service.

A similar type of analysis was conducted to reveal the evidence provided by all the manufacturers and the construction organisations. This revealed that, out of the total of 36 organisations considered, only 16 showed evidence of conducting comparative analysis to measure the waste management performance: 8 retailers (R0, R1, R6, R7, R8, R9, R10, and R11), 2 construction companies (C1 and C3), 4 manufacturers (M3, M5, M7, M8) and 2 waste services (W2 and W4).

Three organisations did not show any evidence of high attractiveness: C4, M6, and T2. Those that demonstrated full evidence (both comparative analysis and feedback) were R0, R1, R6, R7, R8, R9, R10, R11, C1, C3, M3, M5, M7, W2, and W4.

The third and final subsidiary node of Communication is high credibility, which refers to acknowledging facts and knowledge (see Section 3.5.1.3). High credibility comprises three variables, ‘achievements’, ‘guidelines’ and ‘innovation’. The ‘achievements’ in organisational reports were coded manually, since achievements are mostly represented in the reports in numerical or graphical format. ‘Guidelines’ and ‘innovation’ were looked

up using word frequency and the text search command in Nvivo to find the exact words or synonyms.

The synonyms of ‘guidelines’ included: communication, information, guidance/guides, highlights, workshops, knowledge sharing, best practice, awareness/aware, define/definition, helping, educating/education, e-learning, tools, advice and messaging/message. The synonyms of ‘innovation’ include a new approach, rethink, scheme, changes, innovative/innovating, initiative, shifting, and campaign. The words and their synonyms were used in Nvivo to analyse the information from the organisational reports, which are found to be relevant to high credibility.

The findings showed that all organisations provided evidence of achievement in their communicative reports. Those which showed evidence of both innovation and guidelines were R0, R1, R2, R3, R4, R5, R6, R9, C1, W1, W2, W3, M1, M3, M5, M7, M9, and T1. The organisations that showed full evidence of high credibility (all three variables) were R0, R1, R2, R3, R4, R5, R6, R9, C1, W1, W2, W3, M1, M3, M5, M7, M9, and T1.

Figure 5.2 shows that coding the relevant words and phrases to the subsidiary nodes and variables of the Communication category reveals that R0, R1, R6, R9, C1, W2, M3, M5, M7 were the only organisations which showed evidence of all the variables in their reports. Although the remaining organisations did not provide evidence of all variables, the overall communication node shows that for none of the organisations was there ‘no evidence’ of communication in their published reports.

Figure 5.2: Communication

5.3.1.2 Engagement/Action Node

Acting towards shared goals is the key to converting communication into action (Bargh and Ferguson, 2000; Campbell, 2007; Kallgren *et al.*, 2000). Engagement/action theories account for the salient environment, situational norm, social context, and resource availability to enable the building of the associative strength for delivering goals. These are considered to be non-economic and economic variables (see Section 3.5.2). In this content analysis, the Engagement/action node is sub-divided into two subsidiary nodes/variables: the 'economic benefits' and the 'non-economic benefits'.

'Economic benefits' concerns the acquisition of profit and the achievement of financial goals through engagement with waste management activities. 'Non-economic benefits' constitutes other factors that may be harder to quantify, comprising of the benefit to the surrounding community and positive engagement with society through community service, and other factors which constitute facilitating waste management activities.

All the organisations' reports were analysed, and the economic and non-economic benefits were coded manually in Nvivo. The challenge presented by the different formats in the methods of presenting the benefits was clear: economic benefits are presented in a numerical format, while non-economic benefits are presented either in verbal or pictorial

format. Manual coding overcame this challenge by helping to avoid missing any essential information from the reports, and by creating cohesion and comparability between the different types of benefit, despite the different forms of presentation.

Within TSOs, the T1 report indicated that re-use activities in collaboration with retailers helped raise 'approximately £3.2 million in charitable income'. The T2 report showed that, by collecting paint for re-use from several organisations, it saved '£4 per litre, [which eventually] saved the community about £192K'. The T4 report indicated that their re-use scheme supported 910 charities, and saved each charity on 'average £13,000 a year – a total saving of over £11 million'. In the construction sector, the C1 report demonstrated a substantial amount of saving by diverting some '1859 tonnes of material from landfill through charitable donations and re-use programmes'. The C2 report stated that 'over the past 12 months alone, 477 tonnes of waste wood from our sites have either been recycled or re-used'. The C4 report demonstrated financial saving by funding and working on 'community projects'. A similar type of analysis was conducted to reveal the evidence provided by all the manufacturers, other organisations, waste service organisations, and retailers. The overall analysis demonstrated that 24 organisations provided evidence of acquired economic benefits through waste management activities: R0, R1, R3, R4, R5, R6, R7, R8, R9, R10, C1, C2, C4, W1, W2, W3, W4, M1, M6, M8, T1, T2, T4 and O3.

Turning to non-economic benefits, within the waste service sector, the W1 report demonstrated that through their range of projects such as restoring furniture and recycling paint they have been 'able to fund community groups and organisations, whose projects contribute to local heritage, environmental conservation and the building of community facilities near our operations'. The W2 report specified the benefit of their cross-sector collaborative project that focuses on identifying 'policy drivers required to make real and sustained progress in resource security and efficiency within the context of a circular economy'. The W3 report indicated the benefits of their new partnership with 'a specialist community interest company, to identify opportunities for community resource organisations to be involved in the delivery of waste and resource management services'. Finally, the W4 report demonstrated their focus on charitable activities for enhancing local communities. In so doing, they claimed to 'develop and maintain good relations in the local communities' in which they operate.

With the retailers, the R0 report indicated the use of their 'surplus food to feed people in need'. The R1 report indicated the launch of a partnership with a TSO 'to divert surplus food stock to charity'. The R2 report demonstrated the identification of a data

management partner that will aid in enhancing the ‘level of recycled content, recyclability and weight’. The R3 report said that, through their long-term partnership with an environmentally responsible TSO, they are ‘creating opportunities for children living in the developing world’. The R4 report indicated that their partnerships are helping ‘customers re-use or recycle all our products and packaging’. The R5 report specified opening a charitable community store ‘to support the re-use of unwanted resources for the benefit of children and communities’. The R6 report demonstrated donating ‘all food fit for human consumption to charities’. The R7 report specified their commitment to ‘increasing its work with charities which distribute surplus food from retailers to people and communities suffering from food poverty’. The R8 report indicated their awareness of non-economic benefits by ‘building long-term relationships with suppliers’. The R9 report demonstrated their commitment by working with ‘the national food charity’. The R10 report showed their commitment by ‘funding [a] supply chain project launched for all key food suppliers to reduce waste and energy consumption’. Finally, the R11 report demonstrated that they are ‘committed to participate fully in the voluntary agreement drawn up by WRAP on behalf of the government, which aims to reduce food waste, optimise packaging, and increase recycling rates’.

A similar analysis was conducted to reveal the evidence provided by all the other organisations. This showed that all except M9, T1, and O3 provided evidence of non-economic benefits to the society and communities through their commitment to engaging in waste management activities.

Figure 5.3 shows that, other than M9, all organisations showed overall evidence of Engagement/action in their reports.

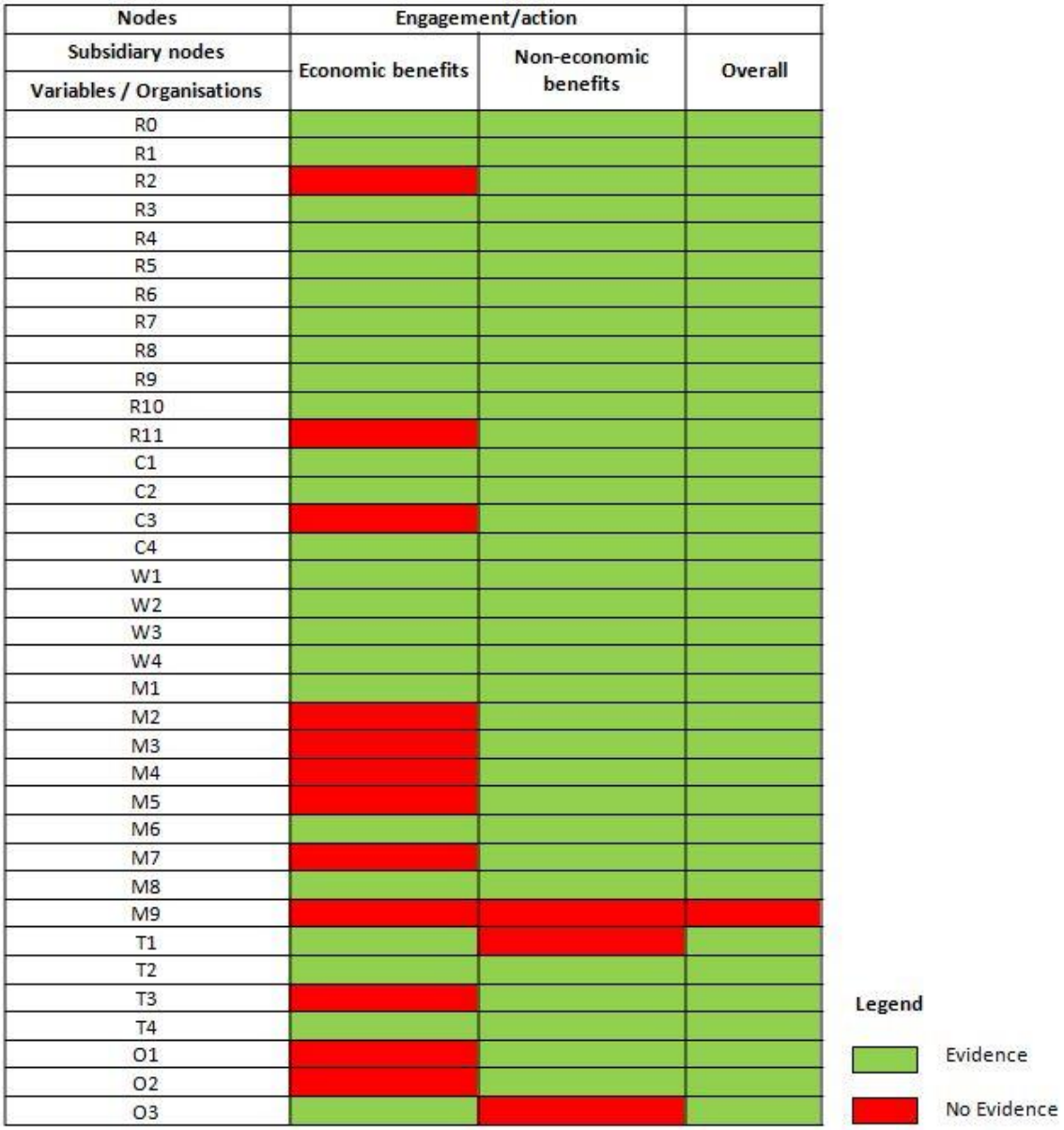


Figure 5.3: Engagement/action

5.3.1.3 Behavioural Maintenance Node

Measuring and monitoring are among the crucial factors that help to ensure that the changed behaviour is maintained, even if it has been embedded. It depends on perceived satisfaction with resultant outcomes, based on the acquired behaviours. Long-term change does not occur without monitoring and making efforts to maintain the changed behaviour (Rothman, 2000).

Two subsidiary nodes and variables were ‘measuring’ and ‘regular monitoring’. Using text search and word frequency commands in Nvivo, the two subsidiary nodes and their synonyms were analysed and coded to provide evidence of behaviour maintenance. The synonyms of ‘measuring’ included: measure, measured, performance, comply, responsible, examine, approach, audit, traceability, tackle, evidence, and impact. The

synonyms of ‘regular monitoring’ included: assessment, risk management/risk assessed, monitor, evaluate, and reporting.

Within the TSOs, the T1 report provided evidence of measuring through their having a ‘formal evaluation processes such as impact assessment’. The T3 report indicated ‘waste assessment’ as a system in place for monitoring resource efficiency.

Within the Construction sector, the C1 report indicated a measuring system that aids in enhancing the ‘sustainability of their supply chain’. The C2 report provided evidence of an ‘online self-assessment tool’ which aids in monitoring environment and climate change data. The C3 report claimed to have a programme that ‘assesses the construction industry supply chain and helps suppliers measure their own performance’. The C4 report referred to an established measuring and monitoring tool called ‘SPeAR assessment (Sustainable Project Appraisal Routine)’.

A similar type of analysis was conducted to reveal the evidence provided by the manufacturers, retailers, other organisations, and waste service organisations. The overall analysis demonstrated that all organisations except R11, M8, T2, T4, and O1 provided evidence of having a measuring process in place. Further, other than W1, M6, T2, and O2, all organisations provided evidence of carrying out regular monitoring to analyse the organisation and their supply chain environmental performance.

Figure 5.4 shows that overall Behavioural maintenance categories are evident in all the organisations except T2. Evidence of only one of two variables was provided by R11, W1, M6, M8, T4, O1, and O2 provide. The remaining 28 organisations provided evidence of both variables.

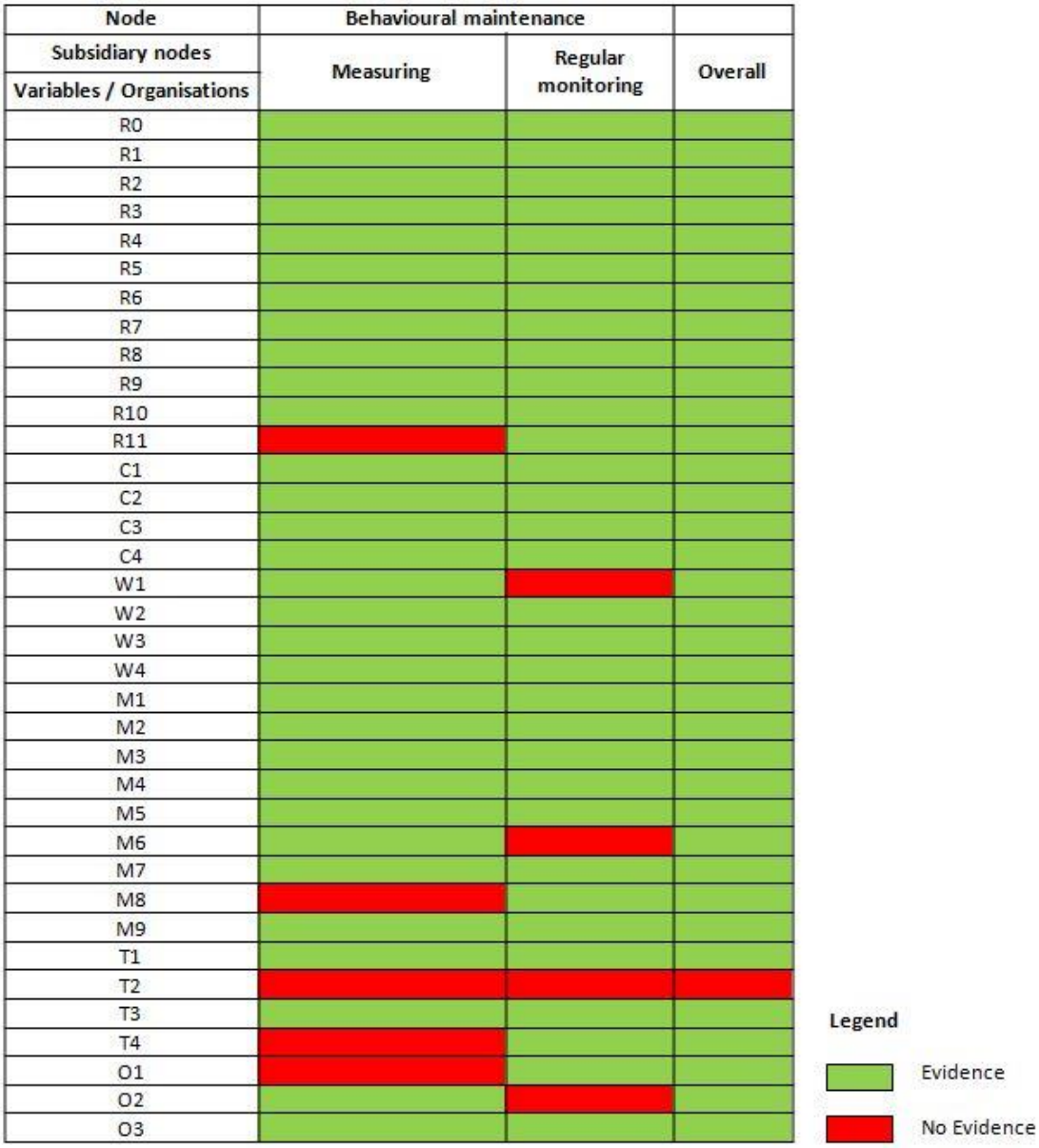


Figure 5.4: Behavioural maintenance

5.3.1.4 Avoidance of the Value Action Gap Node

The key pro-environmental behaviour frameworks discussed in Section 3.3.1 do not indicate the factors that need to be taken into account for avoiding the value action gap.

The value action gap arises from the fact that humans are not entirely rational beings who make systematic use of all information available. Rather, there is frequently a mismatch between, on the one hand, super-ordinate values derived from reasonable evaluation of their situation and, on the other, the actions that they take in response to this situation. Therefore, Avoidance of the value action gap is one of the essential categories that contribute towards maintaining a changed behaviour or a habit. It is not enough to believe in the potential benefit of changes. Those implementing the action require the support and reinforcement of the behaviour. For this research, it was important to identify 'diversity' as a significant variable, indicating individual social and cultural belief systems.

Additionally, ‘guidelines’ and ‘Engagement/action’ are significant factors for the avoidance of pluralistic ignorance or misperceptions.

This research included three variables when identifying the factors facilitating avoidance of the value action gap. To evaluate the overall scoring of Avoidance of the value action gap, it was divided into three subsidiary nodes: ‘diversity’, ‘guidelines’, and ‘Engagement/action’.

The evidence of ‘guidelines’ and ‘engagement/action’ was elaborated on above, and for ‘diversity’ evidence, the synonyms included equality, human rights, diverse, inclusion, non-discrimination, ethics/ethical, disabilities, and values.

The results show that 20 organisations provided evidence of diversity being considered as the part of their communicative policies: R0, R3, R4, R6, R8, R9, C1, C3, C4, W1, W2, W4, M2, M3, M4, M5, M7, M9, T1, and O2.

As diversity is embedded in the UK Equality Act 2010, organisations may have under-reported evidence of diversity: as a regulatory requirement, diversity may be assumed to be a factor automatically taken into consideration, and therefore one not needing to be explicitly acknowledged in the report. It is also possible that any organisation that is not making sufficient allowance for diversity would be unlikely to draw attention to this fact by referring to it specifically.

Figure 5.5 illustrates that, overall, all organisations provided evidence of Avoidance of the value action gap category in their communicative documents.

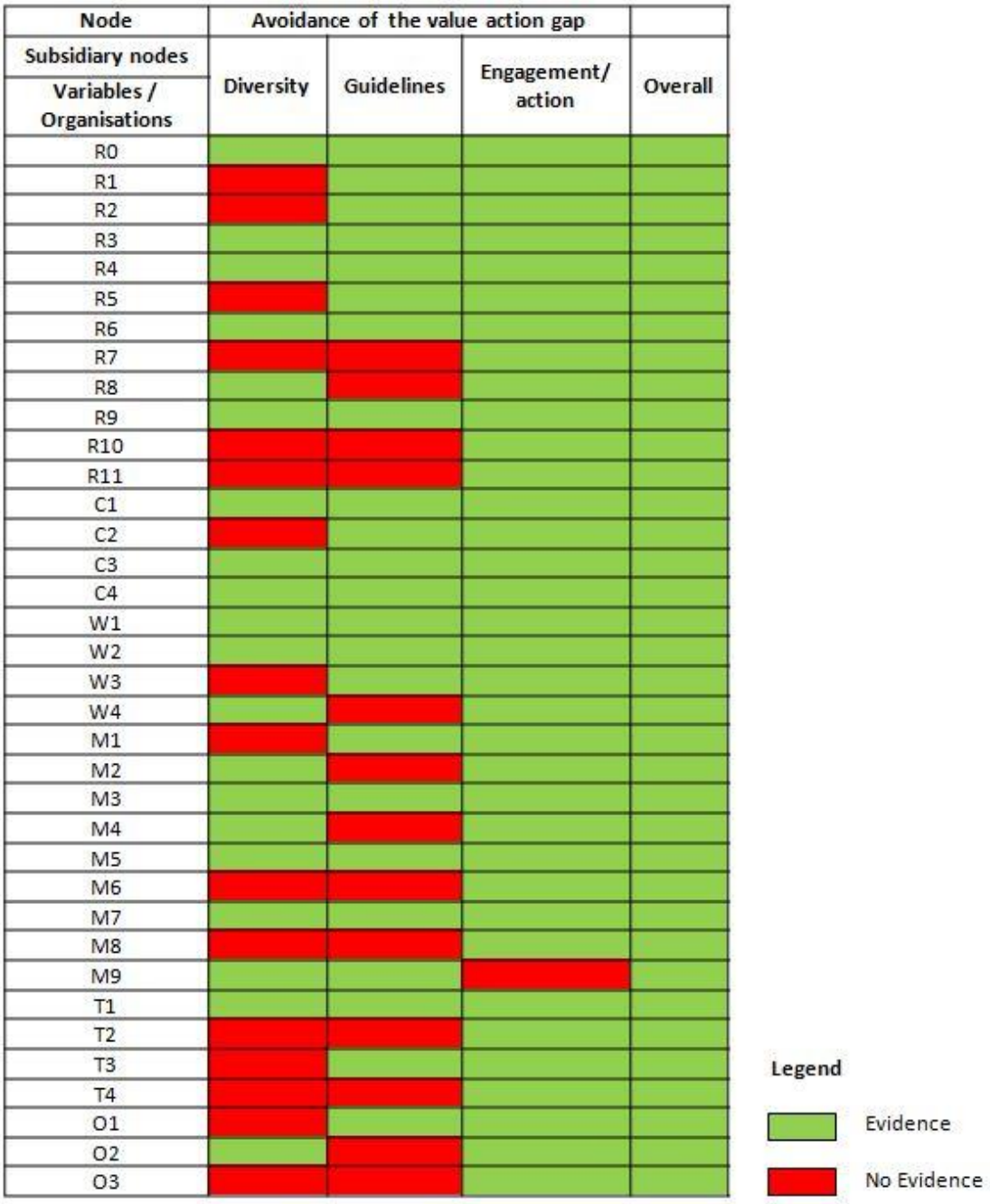


Figure 5.5: Avoidance of the value action gap

5.3.1.5 Discussion

The accumulated findings, through the application of the framework at Stage 1, provided clear evidence of real-life waste best practice on a broader scale – whether its presence or absence. This indicates that transformation is happening at the putatively leading organisational level in regard to waste management activities. It is clear that almost all of the organisations had an awareness of waste strategies for engaging in waste management practices and were conscious of the need for the development of mechanisms to move up the waste hierarchy. However, it is not clear from the findings whether re-use is considered as a regular activity in any of this behaviour.

5.3.2 Stage 2: Likert-scale Analysis

The factor that makes the content analysis method different from any other documentary analysis is the process of transforming qualitative analysis into quantitative results (Kassarjian, 1977). The above coding of organisational reports provided the first step towards this, comprising a transformation of the qualitative information into code. The next step required the presentation of the findings in a quantitative manner.

Table 4.4 in Chapter 4 presents the Likert-type items chosen for this analysis, which are the variables of CEBA or subsidiary nodes. Table 5.3 shows the variability in the maximum scoring from Likert-scales ranging from three to five points according to the Likert-type items and their association with the evidence on waste management in the published reports of the selected 36 organisations. In some instances, it was appropriate to employ a five-point scale to categorise the data; in other instances, a four- or three-point scale was better.

Table 5.3: Likert-scale

Likert-scale **Likert-type items**	**5**	**4**	**3**	**2**	**1**
Waste hierarchy, zero waste to landfill and regulatory requirements	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Recent waste hierarchy , zero waste to landfill	Old waste hierarchy, zero waste to landfill	No waste hierarchy, no zero waste to landfill
Feedback	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Both Internal and external feedback	Either internal or external	No feedback
Comparative analysis	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Comparative analysis with competitors	Supply chain comparative analysis	No analysis with competitors
Achievements	More than previous year and more or = target	More than previous years but less than target	Achievement but no comparison to previous year	Less achievement	No achievement
Guidelines	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Guidelines in place for internal and supply chain	Guidelines in place for internal	No guidelines
Innovations	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Innovation internal and supply chain	Innovation internal	No innovation
Benefits	Economic and non-economic benefits to both organisation and supply chain	Economic and non-economic benefits the organisation only	Either economic or non-economic benefits to both organisation and supply chain	Either economic or non-economic benefits the organisation only	No benefits
Measuring	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Measuring supply chain and external	Pre-assessing supply chain	No Measuring
Regular monitoring	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Monitoring internal and external	Monitoring internal	No monitoring
Diversity	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Diversity internal and supply chain	Diversity internal	No diversity
Guidelines	N/A (for the purpose of this thesis)	N/A (for the purpose of this thesis)	Guidelines in place for internal and supply chain	Guidelines in place for internal	No guidelines
Engagement/ action	Economic and non-economic benefits to both organisation and supply chain	Economic and non-economic benefits the organisation only	Either economic or non-economic benefits to both organisation and supply chain	Either economic or non-economic benefits the organisation only	No benefits

The composite score, or the result, is either the sum or mean of the Likert-type items (Boone and Bonne, Jr., 2012; Johns, 2010; Likert, 1932).

Table 5.4 provides the composite maximum and minimum scoring that each category can receive in this study when an average or mean of Likert-type items is taken. The reason for using the mean over summation is due to the variation in the Likert point scale.

Table 5.4: Composite scoring

Categories (CEBA)	Communication						Engagement / action	Behavioural maintenance		Avoidance of the value action gap		
Variables/ Likert-type items	High means control	High attractiveness		High credibility								
	Waste hierarchy & zero waste to landfill	Feedback	Comparative analysis	Achievements	Guidelines	Innovations	Benefits	Measuring	Regular monitoring	Diversity	Guidelines	Engagement / action
Minimum scores	1	1	1	1	1	1	1	1	1	1	1	1
Maximum scores	3	3	3	5	3	3	5	3	3	3	3	5
Mean minimum of Likert-type items	$\bar{x}$ (1) = 1	$\bar{x}$ (1,1) = 1		$\bar{x}$ (1,1,1) = 1			$\bar{x}$ (1) = 1	$\bar{x}$ (1,1) = 1		$\bar{x}$ (1,1,1) = 1		
Mean maximum of Likert-type items	$\bar{x}$ (3) = 3	$\bar{x}$ (3,3) = 3		$\bar{x}$ (5,3,3) = 4			$\bar{x}$ (5) = 5	$\bar{x}$ (3,3) = 3		$\bar{x}$ (3,3,5) = 4		
Overall Mean Minimum scores	$\bar{x}$ (1,1,1) = **1**						$\bar{x}$ = **1**	$\bar{x}$ = **1**		$\bar{x}$ = **1**		
Overall Mean Maximum score	$\bar{x}$ (3,3,4) = **3**						$\bar{x}$ = **5**	$\bar{x}$ = **3**		$\bar{x}$ = **4**		

The findings demonstrate the process whereby a final score is reached. This system of ranking has 15 as the maximum score, which is achieved by adding up the overall mean maximum scores of all categories (Table 5.4), and 4 as the minimum score.

Stage 1 analysis demonstrates a clear need for separating the evidence regarding re-use and recycling to place more emphasis on re-use, which has previously been underexplored at the organisational level.

Table 9.4 in Appendix II, Section 9.2.1 provides an explicit separation of re-use evidence (shown in pink) from recycling evidence (shown in green) while associating the information extrapolated from organisational reports through Nvivo with CEBA categories.

Behavioural maintenance (B) and the Avoidance of the value action gap (A) categories present the same information about recycling and re-use evidence. This is an expected association for organisations, as both recycling and re-use are elements within the wider area of waste management (see Section 2.3). Thus, companies are expected to account for the connection between these two elements by providing common measuring, monitoring and diversity mechanisms to deal with waste management goals.

Within the Communication (C) category, the commonality lies in the evidence of high means control, namely the waste hierarchy and the zero waste to landfill, and high

attractiveness, namely feedback and comparative analysis. This is because the compliance measures and the peer pressure from other organisations emphasise both recycling and re-use as important elements in effective waste management, thereby grouping them as two aspects of the same area. This challenge is mitigated by the fact that most of the variation in the evidence between re-use and recycling is apparent in demonstrating organisational achievements, guidelines, innovations, and economic and non-economic benefits. Therefore, as these variables are part of the CEBA categories Communication (C), Engagement/action (E), and Avoidance of the value action gap (A), it affects the final composite scoring and enables a demonstration of the variation between re-use and recycling evidence, making the result robust to carry out further in-depth analysis.

In essence, due to the complexity and sensitivity of the CEBA framework, wherein all the categories and variables are inter-related and thus interact with each other, the framework enabled a detailed reading of the intricacies of the variables, allowing the areas of re-use and recycling to be separated and explored as distinct pieces of evidence. This demonstrates that the framework enabled me to carry out critical analysis and produce fruitful results of an enormous amount of complex organisational data.

5.3.3 Stage 3: The Findings

Overall, organisations which scored 60 per cent and above are considered to be providing ‘strong’ evidence of re-use. Organisations which scored between 30 per cent and 60 per cent are considered as providing ‘weak’ re-use evidence. Finally, organisations which scored 30 per cent and below are considered to be providing ‘no’ evidence of re-use. Similar criteria were applied to the evidence of the composite recycling result, which was then compared with the re-use evidence to provide a point of comparison.

This transformation of Likert-scale scoring into composite scoring is important at this stage in the research, because of the complexity and varied information demonstrated through the different scoring system. The transformation of the Likert-scale does not represent a simplification of the extensive information gathered in Stage 1 and Stage 2, but a refinement process narrowing down and focussing the information into comprehensive results. It also enhances its accessibility and comprehensibility across a range of fields and to a broader audience, thereby increasing the usefulness of the results, the framework, and the method. Figure 9.5 (re-use evidence) and Figure 9.6 (recycling evidence) in Appendix III, Section 9.3.1 provide the mean score of each organisation as a percentage of the maximum score of 15.

Figure 5.6 shows that all organisations have made progress towards re-use, but that recycling and recovery are the dominant activities in waste management.

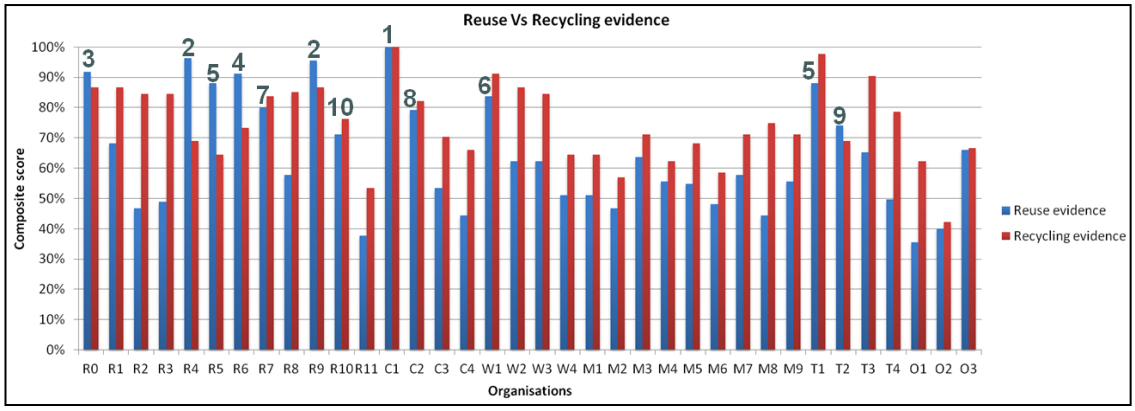


Figure 5.6: Re-use vs recycling evidence

Because these organisations have been drawn from WRAP business case studies, it is unsurprising that none has received a composite scoring of 30 per cent or below, which would indicate no evidence of re-use and recycling behaviour. However, given that the organisations in the WRAP business case studies should represent the vanguard of waste management behaviour, it is striking that only 50 per cent of 36 organisations showed strong evidence of re-use. The literature review revealed that recycling is one of the dominant and preferred approaches to waste management, and this is further supported by this content analysis, which found that around 89 per cent of 36 organisations showed strong evidence of recycling.

Of the 50 per cent showing strong evidence of re-use, the top ten organisations included seven retailers, two construction companies, one waste services company and two TSOs. Most of the manufacturers showed weak evidence of re-use. This research indicates that such a result could be due to the fact that manufacturers relate re-use value with remanufacturing (as identified in the literature review, see Section 2.3.1), which is not considered in this content analysis. It is not considered because, for this investigation, remanufacturing is identified as part of the 'science first' solution, and thus different from re-use, which is a 'human action' solution.

Figure 9.5 (Appendix III, Section 9.3.1) shows a table of the scoring of re-use evidence. It is summarised in Figure 5.7 below, which provides the scores received by each organisation in association with the CEBA pro-environmental framework.

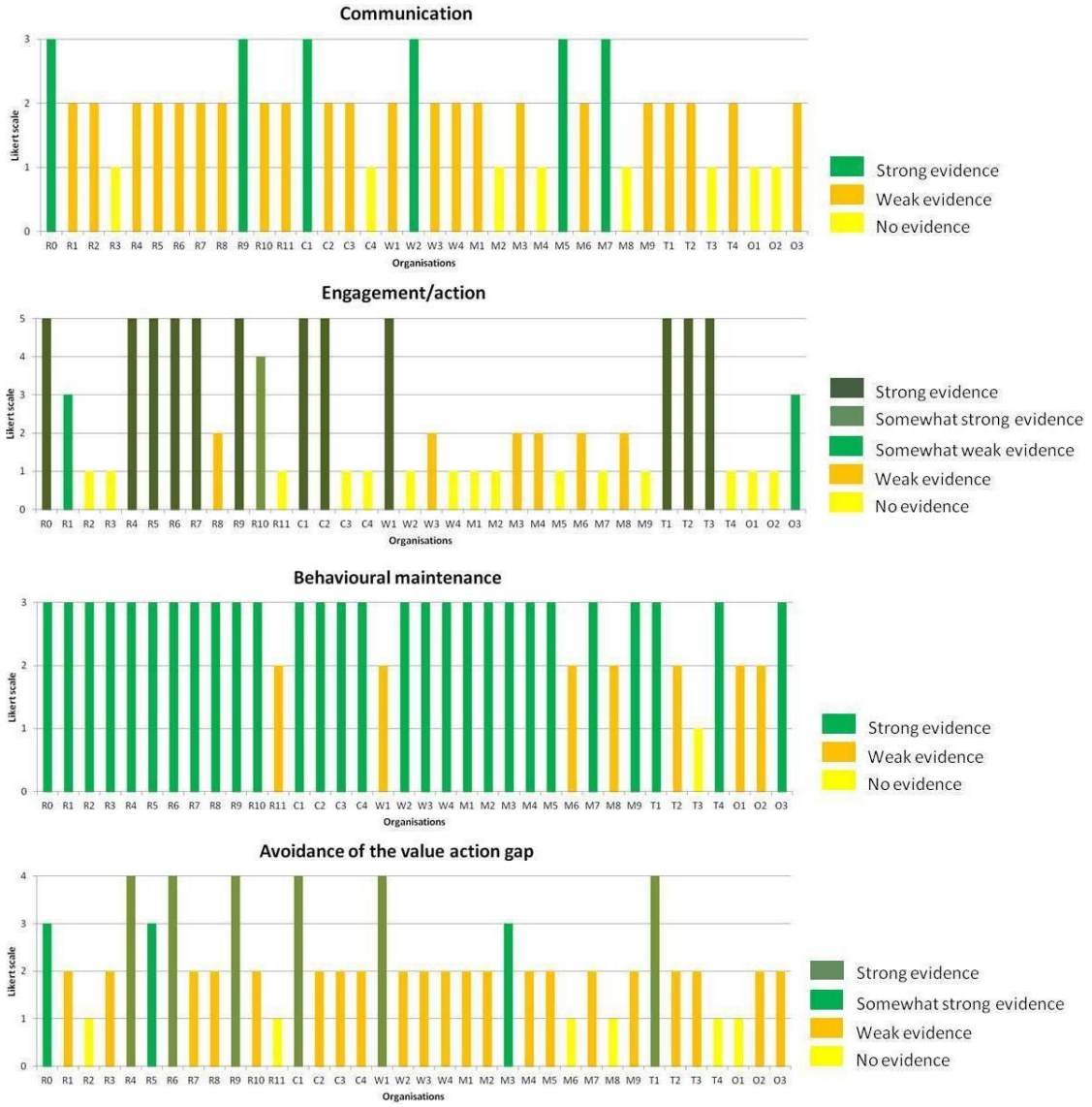


Figure 5.7: CEBA evidence

Figure 5.7 shows that retailers providing strong evidence of re-use mostly exhibit 'strong' or 'somewhat strong' evidence of the Engagement/action and the Behavioural maintenance categories in building an associative strength.

Out of 11 retailers, 7 (63 per cent) show 'strong' or 'somewhat strong' evidence of Engagement/action and 10 (90 per cent) exhibit strong evidence of Behavioural maintenance. This implies that 7 retailers at the high end showed evidence of both economic and non-economic benefits within their organisation and the supply chain network. For instance, through their 'refurbish scheme', R5 managed to divert more than 250 tonnes of material to re-use, in partnership with their re-use supply chain. Similarly, R6 introduced a 're-usable bag scheme', which helped them to raise more than £30k for the charity with which they are partnered. The retailers further provided evidence of measuring and regular monitoring processes being in place for both internal and external stakeholders. For instance, R0, R2, R3, and R6 provided evidence of pre-assessment of

new suppliers and regular risk assessments as an embedded measuring and monitoring system.

Similarly, the highest scores of 'strong re-use' evident in the construction organisations are in the Engagement/action and the Behavioural maintenance categories. Two (50 per cent) of the construction organisations provided 'strong' evidence for Engagement/action. C2 had introduced an innovative scheme in partnership with its supply chain to encourage re-use of furniture and electrical items and reduce waste from void clearance. Similarly, in 2012, C1 developed a strong partnership with one of its supply chain organisations to divert construction materials for re-use. All of the construction organisations provided 'strong' evidence of Behavioural maintenance, insofar as all of them exhibit strong evidence of having a measuring and monitoring system in place.

Three (75 per cent) of the charities/TSOs showed 'strong' re-use evidence and received the highest score in the Engagement/action category. For instance, T1 showed a strong relationship with R6, from whom T1 received a donation of more than £3m in charitable clothing. Similarly, T2 managed to secure more than £100K in funding to grow its paint re-use project through a strong supply chain network. Half of TSOs received the highest score within the Behavioural maintenance category, and T1 and T4 provided 'strong' evidence of measuring and monitoring at regular intervals of time.

The findings show that 72 per cent of retailers, 50 per cent of construction companies, 75 per cent of waste services, 11 per cent of manufacturers, 75 per cent of TSOs, and 33 per cent of others provided 'strong' re-use evidence. However, it would be unwise to generalise by saying that re-use behaviour is embedded within these organisations because they do not exhibit strong re-use evidence across all categories. Further in-depth analysis is needed to understand the mechanisms organisations employ, and the gaps they face, when attempting to build an associative strength to make re-use a habitual practice. It is also possible that those organisations that exhibit 'weak' evidence of re-use (Figure 5.6) might have under-reported in some areas, as has previously been discussed.

This content analysis shows the dominance of recycling over re-use practice, which matches the literature evidence provided in Chapter 1. Post-Industrial Revolution trends have led to the increase in consumption and production in the market, which has reduced re-use practice, despite it being one of the top priorities in the waste hierarchy. The lack of legislative and policy measures for enforcing re-use could be a barrier to establishing re-use as a normal practice.

However, there are organisations which show strong evidence of re-use and are making progress up the waste hierarchy. For example, R4 and R9 received the top scores of 96 per cent (Figure 5.7). They indicate that they re-use unsold stock by distributing it to TSOs, to the benefit of both the retailers and the TSOs. However, re-use of unsold stock is not a common practice in any sector other than among those retailers that show 'strong' evidence of re-use. The reason could be the diverse nature of the sector in which they operate (Section 5.3), or lack of knowledge about unsold stock. Also, within the retail sector, the unsold stock may be viewed as presenting a potential problem for the organisation, which then needs to be reviewed regarding profitability and the identification of insufficiencies within the company's business plan, rather than as presenting an opportunity for engaging in re-use behaviour.

This would mean that in this context, re-use of unsold stock (a 'human action') cannot be considered as an environmental asset as it will maintain the imbalance between the organisation's drive for profit and its motivation to engage in sustainable behaviour. This dichotomy between economic and environmental good for the re-use of unsold stock could vary from one type of material to another, a topic which is yet to be explored.

This study has identified that, at the organisational level, re-use is not limited to the buying and selling of items but also to multiple uses of items, which can also be in the form of donations. This demonstrates a limitation of the definition of re-use provided by DEFRA (2013b, p.5). This form of facilitation happens through collaboration, which is exhibited in the literature on re-use (Section 2.4).

This study illustrates such collaboration by indicating that the organisations showing 'strong' re-use evidence (R0, R1, R4, R5, R6, R7, R9, R10, C1, C2, W1, W2, W3, M3, T1, T2, T3, and O3) also have a common feature of collaboration with TSOs for re-use activities. For example, R4, as a part of its sustainability plan, provides a successful example of clothes re-use in collaboration with T1. Another example is C1 (which scores 100 per cent in evidence for re-use), which donated around 30 tonnes of re-usable furniture to charitable organisations in 2012. Within the retail sector, R6 and R9 show collaboration with T4 to give away unsold food and drink rather than throwing it away. The uniqueness within this collaboration is the engaging, enabling and encouraging of corporations to engage in re-use through collaboration with TSOs, which has led to social, financial, and environmental benefits to corporations, TSOs and the community.

The findings indicate that within this sample of study, ‘collaboration’ between corporations and TSOs is a potentially effective strategy, but only when re-use is seen as an opportunity.

5.4 CONCLUSION

When seeking to apply the CEBA framework to real-life re-use practices, it is possible to draw out sufficient evidence from organisational reports to provide a comprehensive score, and thus the basis for analysis. It also provides evidence that some form of re-use practices are happening at the so-called leading organisational level, where there is a proven motivation to move up the waste hierarchy and engage in waste strategies. However, the biggest challenge is to convert this action into sustained normative behaviour. A challenge is presented in the question of how to encourage parity between the different sectors and organisations: it is clear from the results that some sectors engage in re-use practices more readily than others.

Although the evidence shows that improvements in waste management are firmly embedded in every case from the compliance point of view, variation in quantitative measures indicates that organisations are taking different routes and setting different priorities. In part, this is due to the diverse nature of the sectors in which they operate and their historical positioning.

The content analysis provides evidence that the range of actions and their formal embedding differs from organisation to organisation, suggesting the existence of areas of complementary strengths that can provide opportunities for collaborative organisational learning. This is indeed a possibility, as the study shows that corporations are indirectly connected through their common re-use supply chain TSOs (Figure 5.8).

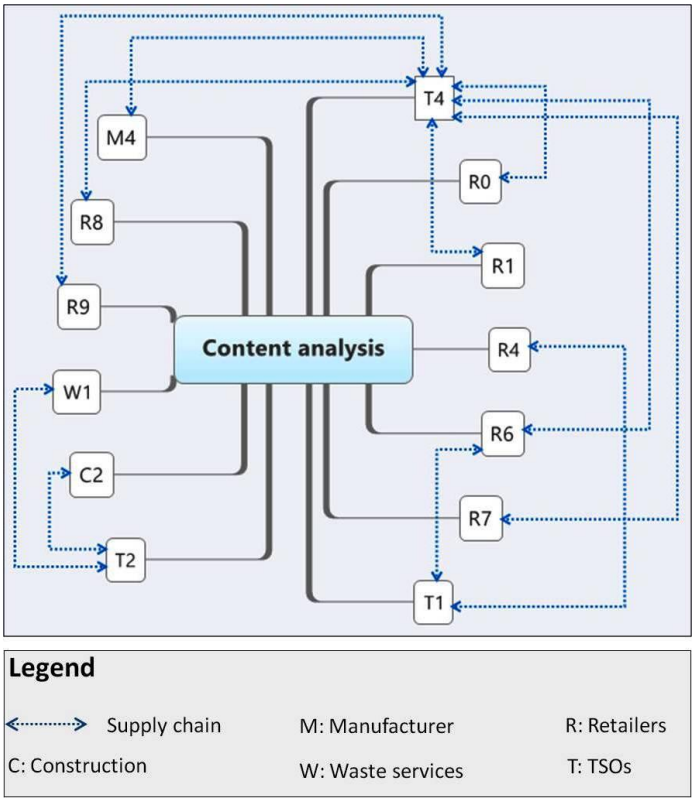


Figure 5.8: Organisations connectivity analysed through content analysis

This study also shows that all 36 organisations are, to a greater or lesser extent and in differing ways, seeking to implement waste strategies and policies that evidence the pursuit of an associative strength. It also shows that the dominant activities for most organisations are recycling and recovery, rather than the re-use of materials. This is the case despite the fact that the organisations are selected from the WRAP business case studies, which implies that they are all in the vanguard of moving up the waste hierarchy and attempting to achieve zero waste to landfill.

We will now progress to the next step in this research, which involves carrying out an in-depth analysis of the corporations and their re-use supply chains, and thereby extending the explorations of the connectivity shown in Figure 5.8 above.

6. CHAPTER SIX: SEMI-STRUCTURED INTERVIEWS WITH ORGANISATIONS

6.1 INTRODUCTION

This chapter presents the findings from the in-depth semi-structured interviews, the final part of the empirical study of this thesis. Figure 6.1 provides a schematic representation of the chapter.

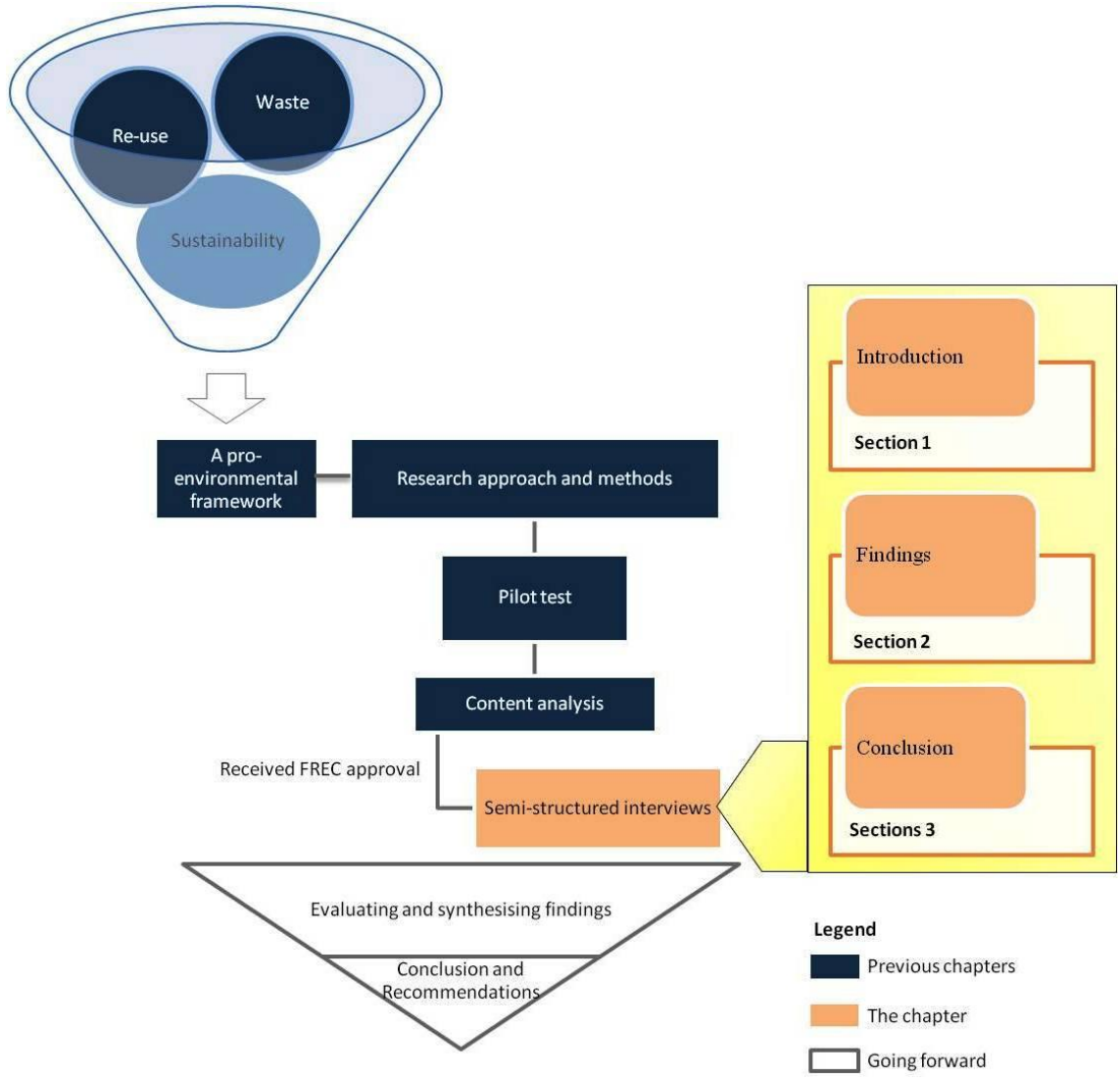


Figure 6.1: The semi-structured interviews chapter

The Nvivo coding of the interviews made it possible to distinguish the factors, mechanisms, and barriers identified by the participants, which aided in analysing them for producing the findings. Appendix IV, Section 9.4.3, Tables 9.5 to 9.10 show the coded information which was used in this chapter for analysis.

Figure 6.2 provides a schematic representation of the participants selected for the semi-structured interviews and their links to one another.

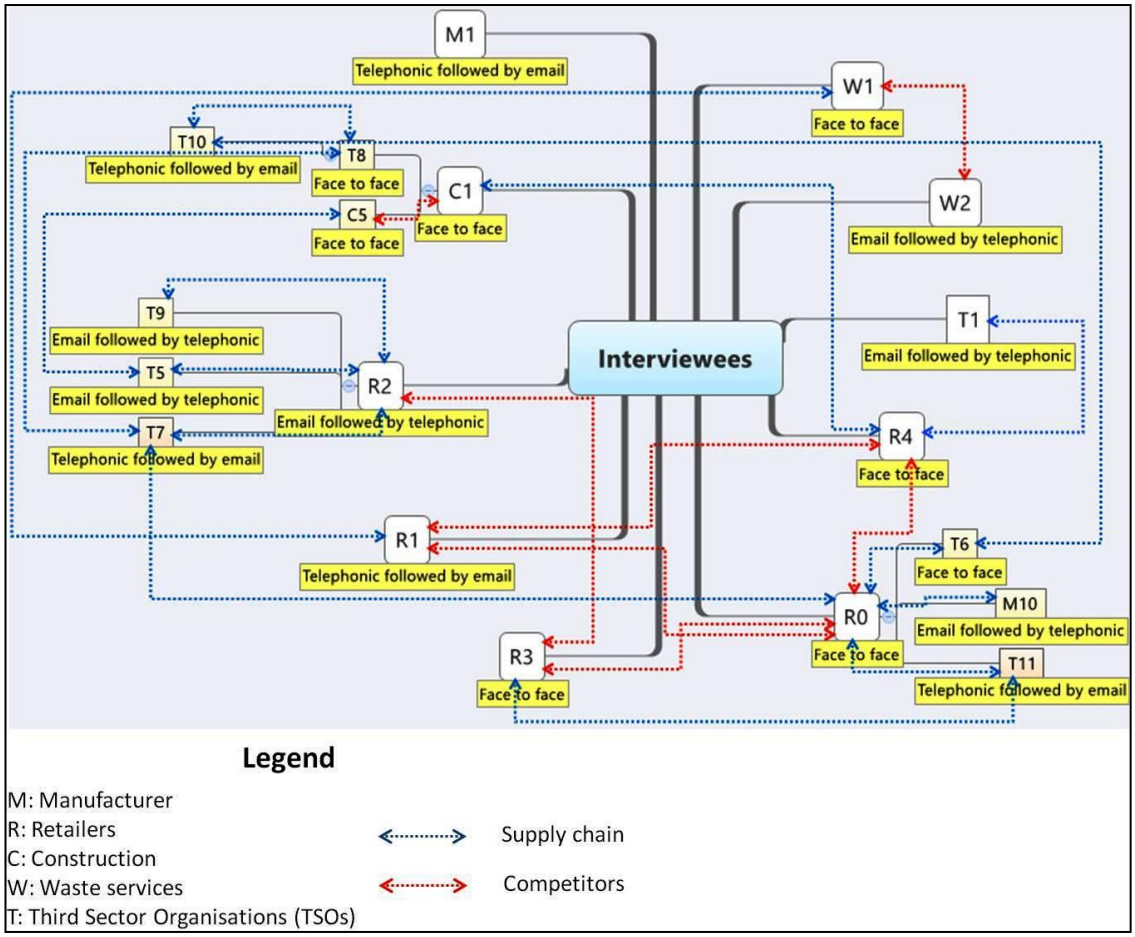


Figure 6.2: Semi-structured interview participants

Interviewing organisations from the content analysis study, while also drawing in their re-use supply chains and competitors, help present a balanced selection of stakeholders. That is, a minimum of two organisations were represented from each sector: five from retailers, two from construction, two from waste services, two from manufacturers and eight from third sector organisations (TSOs).

Figure 6.3 below shows that the selected participants vary from most committed (ranking 1 to 6) to the least committed (rankings 20 to 24) organisations. Such a wide-ranging and comprehensive selection of participants for semi-structured interviews is seen by Bauer and Gaskell (2000) as adding credibility to a qualitative study, since the selection relies not merely on including a sufficient number of organisations, but also ensuring that a representative range of organisations is included, thus enabling robustness (Biernacki and Waldorf, 1981).

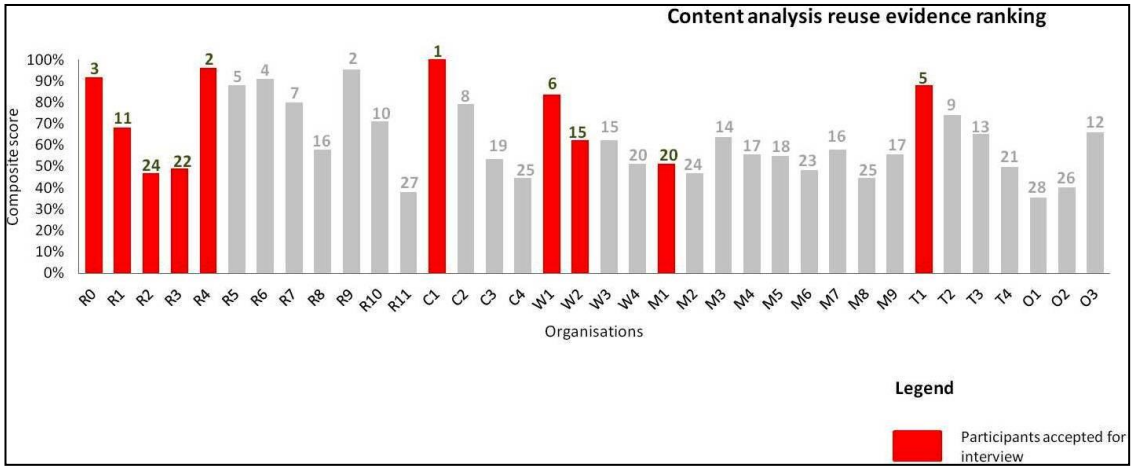


Figure 6.3: Participants ranking range

6.2 FINDINGS

This chapter is structured by grouping the questions in line with the CEBA framework from the semi-structured interviews. Given that this method was used as a follow-up of the content analysis method, the findings from the analysis were used throughout the interview process to enhance the information obtained to reach a full and cohesive result for this investigation.

The sections of this chapter provide an analysis of the re-use behaviour of organisations, showing how re-use is treated as an opportunity. It further indicates the mechanisms and barriers these vanguard organisations face in pursuing re-use as a regular business activity.

6.2.1 What are the drivers for instigating re-use behaviour?

As part of high attractiveness, a Communication variable within CEBA, this question was asked of the organisations to reveal the factors that instigated re-use behaviour. A probing technique was used to generate the answer while maintaining an unbiased position. The interviewees were asked:

> the research shows that change in an organisation takes place at any or every level. From your perspective, can you give me an example of you being one of the leaders in re-use, so how the re-use policy or strategy is coming to being in your organisation?

Alongside this, the interviewees were also asked ‘do you carry out any form of comparative analysis with your competitors?’

The answers and ensuing discussions demonstrated a close connection with the high attractiveness variable of CEBA, namely the response to feedback and peer pressure and

competitive analysis with other organisations. In this way, it is possible to analyse the answers from the semi-structured interviews, thereby testing the capacity of this CEBA as an analytical tool. Table 6.1 indicates the factors across the different sectors.

Table 6.1: Factors initiating re-use

Sectors	**Organisations**	**Factors**
Retail	R0, R1, R2, R3, R4	Customers, Competition, Re-use supply chain approach, Staff survey (mid-level/bottom-up approach), Top-down (zero waste to landfill)
Construction	C1, C5	Sustainability staff/team (mid-level approach, zero waste to landfill)
Waste services	W1, W2	Customers, Top-down (zero waste to landfill)
Manufacturers	M1, M10	Sustainability staff/team, Top-down (zero waste to landfill)
TSOs	T1, T5, T6, T7, T8, T9, T10 (liquidated), T11	Top-down (approached the corporations), Bottom-up (with local authority's support)

The factors indicate that, among the sample organisations, re-use behaviour is initiated via both peer pressure and feedback mechanisms. The varied factors are an internal influence (such as via staff through middle or bottom-up approach), compliance (such as via top-down approach), supply chain, competitors and customers.

Alongside the factors above, the analysis of the interviews indicates that the most common starting point for re-use activities within these organisations was 2010 to 2012. By relating this finding to the literature review, it is possible to see that this constituted the period when the circular economy was reintroduced by the Ellen MacArthur Foundation (EMF), and the government updated the waste hierarchy by introducing 'preparing for re-use' as the second best practice, after prevention. This period can be considered as marking the point at which re-use achieved recognition as a potential practice into which organisations could make investments.

The evidence of the factors facilitating re-use behaviour during the years from 2010 to 2012 is illustrated through the following examples.

Among retailers, R0 indicated:

> we run a partnered retail organisation. We introduced the first partnership combined report (sustainability/annual) in the year 2009. Re-use initiative started in 2012. Part of the driving force towards re-use are our customers: currently, people want to know whether a product is sustainable or not, such as FSC certified etc. Then another driving force is competition. One of the best examples is R4 introducing their sustainability plan, and they have improved a lot. We have good quality products that are also one of the driving forces by increasing its life. At R0 we are driven towards doing the right thing, and consumers are a big motivator for living up to our expectations.

The R0 response demonstrates that the factors that enabled the facilitation of re-use activities included a combination of customer feedback and competition. Customer feedback demonstrates the effect of individuals on R0, which drove them towards developing compliance (such as via FSC certification). This represents a form of high means control (Section 3.5.1.1). This demonstrates the interdependency of CEBA categories and variables, and also relates to the argument from pro-environmental behaviour literature that individuals' and organisations' behaviour patterns are intertwined.

It is also important to note that, despite what might be seen as a fresh start in 2009, for R0, re-use continued to be overshadowed in their sustainability goals until 2012. Nevertheless, their motivation towards extending the life of products shows that this shift in attitude in 2012 is not limited to re-use, but also encompasses moving towards the top of the waste hierarchy, i.e. prevention.

R1 indicated:

> in 2009, we moved our clothing brand into a purpose-built new office, and during the build process ensured sustainability was high on the agenda as the building was installed. Re-use at our organisations started when T4, the TSO, approached us in 2011. Because what we use to do was to return the unsold food stock or surplus to the manufacturers. So T4 asked for our support, and we were fine with that since T4 distributes the unsold food stock to charities.

Unlike R0, the R1 facilitation towards re-use was through the external peer pressure, i.e. their re-use supply chain. Furthermore, the evidence demonstrates that the shifting of giving away surplus food from manufacturers to T4 was because of an intention to benefit charities. This finding can be directly linked to one of the CEBA categories, Behavioural maintenance, which indicates that one of the ways to maintain a newly formed behaviour is by measuring the benefits that can be attained from it (Section 3.5.3). In addition, this again reiterates the interdependency of CEBA categories and variables, whereby a behavioural change is achieved through the combination of a high attractiveness variable (external peer pressure) and a Behavioural maintenance variable (measuring the benefits) (Section 3.6).

R2, a household goods retailer, said that they launched an effective logistics delivery plan in 2008 as a new sustainable initiative to reduce cost and carbon emissions in response to the Climate Change Act 2008. Despite this initiative, they stated that re-use only came into practice in 2011 when staff from their local stores provided their feedback. This led

the management to make re-use part of their compliance efforts. At present, re-use activity is organised in the form of donations, which are managed centrally. This again demonstrates the imbrication of individual and organisational behaviour patterns through the effect of staff on the organisation, and also reiterates the interdependency of CEBA categories and variables, as a high attractiveness variable (internal feedback) facilitated high means control (compliance) (Section 3.6).

Moreover, even though at both R1 and R2 the sustainability initiatives occurred before 2010, it was only between 2010 and 2012 that re-use activities started. The evidence of the period when re-use was instigated is further indicated by R4, which introduced its first sustainability strategy in 2007, which came into practice later in 2009. However, it was not until 2011 that re-use activities started in the organisation. Here again, the factors facilitating the re-use initiative included a combination of different categories and variables of CEBA: compliance (high means control) and customers' feedback (a variable of high attractiveness). R4 said:

> the inspiration behind the re-use initiative was the company goal that was set out to be zero waste to landfill, which was simple and easy to understand. There were lots of details behind what the materials will be re-used for…for most people, through engagement, it was made [clear] that nothing goes to landfill. It was time-consuming working with our internal team, our waste providers, and logistic providers to work up ways of getting maximum value from the waste. It was a top-down approach and started in 2011. We also carried out a customer survey to understand their behaviour towards the re-use of clothing by donating it to charity. We found out that lots of people do like to give, but lots of people do not, especially those who enjoy fashion, and it is a social activity. For them, their clothing is a source of pride, and since it cost them a decent amount they do not want to give that away free of cost.

Unlike the above retailers, R4 initiated re-use as part of compliance (high means control (Section 3.5.1.1)). The establishment of compliance (zero waste to landfill) in the organisation led the management to engage with the internal staff and supply chain to motivate them to change behaviour. This represents a combination of the Communication (high means control) and Engagement/action (non-economic) variables of CEBA. In addition, the above evidence indicates that, with an ambition of maintaining the newly formed behaviour, R4 used the retrieval of maximum value from waste as an intended economic benefit. This represents the use of the Behavioural maintenance variable (measuring benefit) of CEBA (Section 3.5.3).

The above shows a combination of Communication, Engagement/action and Behavioural maintenance, thus reiterating the interdependency of CEBA categories and variables (Section 3.6). Simultaneously, R4's receiving customer feedback by piloting a donation scheme for facilitating re-use practice again reflects the effect of individuals on organisational behaviour, thus representing an imbrication.

The above examples also evidence that the shift towards re-use activities among the retailers (interviewed) notably falls between 2010 and 2012, even though sustainable developments, strategies and agendas were in place from 2007–09. Furthermore, the factors initiating re-use activities vary from one retailer to another.

The analysis therefore demonstrates that compliance cannot be considered a sole responsible factor for initiating re-use of materials. Instead, pro-active effects of internal and external stakeholders are also among the key factors.

The above analysis is further validated from the following evidence of TSO interviewees.

For instance, T10, a regional-level TSO indicated:

> re-use initiation was a bottom-up approach in 2010 by receiving an initial £5 million funding from the government. T10 is a highly inspired charity from the London Community Resource Network (LCRN). LCRN was very strong in lobbying with local authorities for asking them to engage in re-use activities with charities and communities. So, one of the local authorities challenged LCRN to pull themselves together and provide a proposal to initiate re-use. So, it took almost 18 months to come up with the paper, theory, and methodology which then presented LCRN goal which received £5m of funding to start the T10.

Similarly, T6, a local-level TSO and a registered member of T11 (a national-level TSO), indicated:

> The re-use initiative started when I was acting in capacity with T10 and proposing a project that was differentiated to what I saw existed. It was then, in 2011, that I found the space and told local authorities about it for funding, and received funding from the local authority to instigate re-use as a social enterprise activity. It was a bottom-up approach.

The above evidence demonstrates an essential role of local authorities or government organisations in supporting TSOs for facilitating re-use practice. This evidence is in line with the re-use literature at the household-level (Section 2.4.1.1). The above evidence further demonstrates that the initiation of re-use was through external peer pressure.

However, the influence of this was dependent on the availability of resources, i.e. the economic variables of CEBA (Section 3.5.2.2).

Interviews with other TSOs (Section 9.4.3, Table 9.6) yet again indicated that it was between 2010 and 2012 that they instigated partnerships with corporations for expanding re-use activities to achieve social, economic and environmental benefits. For example, T11, a national-level TSO specialising in bulky furniture re-use, approached R3 with a proposal to remove their used bulky furniture as part of a 'take-back' scheme in which it would be sold to the public at a lower price. This form of collaboration among private organisations and TSOs for carrying out re-use of second-hand items is indeed evident in the re-use literature (Section 2.4.1.2).

The above evidence demonstrates the initiation of re-use practice through external peer pressure (high attractiveness (Section 3.5.1.2)), wherein the operation of re-use activity is dependent on compliance ('take-back' scheme) via high means control (Section 3.5.1.1). Furthermore, the intention for TSOs and corporations is to have social, economic and environmental benefits, thus indicating the relevance of the Behavioural maintenance category of CEBA (Section 3.5.3). This again reiterates the complexity associated with behaviour change and the interdependency of CEBA categories and variables.

The interviewees from the construction, waste services and manufacturing organisations also demonstrate the variation in factors that instigate re-use. Nonetheless, the time of such initiation remains between 2010 and 2012. For instance, C1 indicated:

> re-use started as a middle approach in 2010; basically, it came from the sustainability team. It was identified in one of our projects where the sustainability team saw lots of potential materials on site that were discarded as waste. So the sustainability department discovered the TSO with whom we first started our re-use activity for social benefit. [The motivation for it was] Us trying to drive the projects team to find ways that they can save money, improve their waste performance and benefit the local community at the same time. That was added in by the top [management] to deliver the money to the bottom line.

Along similar lines, M1 also illustrated that the initiation of re-use was via internal feedback, whereby they indicated that

> the re-use initiative started at the middle…level among the people who were dealing with it in 2011. However, when they shared what they liked to do, then they received the support from the senior management team.

The above evidence again indicates that social, economic and environmental benefits were the goals that facilitated staff to provide their feedback to the senior management, which led to the adaptation of re-use behaviour within the organisations. This demonstrates an interdependency of CEBA categories and variables: to gain benefits via Behavioural maintenance (Section 3.5.3), internal staff facilitated re-use activities through a high attractiveness variable (Section 3.5.1.2), leading to behaviour change.

On the other hand, W1 identified customers' requirements as the indicator for carrying out re-use activities. They said:

> the re-use initiative was not top-down; it was a customer requirement to provide social value through re-use in 2012. It is in the individual project basis: when tender comes out, customers (local authorities) asks for it. Also, when the corporate responsibility (CR) programme started, re-use was identified as one of the ways by which we could preserve resources. This initiative came from the CR team.

This evidence indicates that external and internal peer pressure, via high attractiveness (Section 3.5.1.2), are the factors facilitating re-use initiatives. This yet again demonstrates the imbrication of individual behaviour (staff) and the organisational level. Furthermore, the intention behind this initiative is to provide social benefits and preserve resources, which demonstrates the relevance of Behavioural maintenance (Section 3.5.3), thus representing the interdependencies between CEBA categories and variables.

As indicated at the start of this section, this stage of the analysis intended to exclusively utilise evidence of the high attractiveness variable of CEBA. However, the interdependency of CEBA categories and variables demonstrates the complexity of factors facilitating behavioural change. This bolsters Meneses and Palacio's (2005) argument that behaviour change is a very complex activity that requires analysis of many aspects of life, including its social, cultural, and financial dimensions.

Furthermore, in acknowledging this interdependency of CEBA, it can be concluded that feedback and peer pressure from individuals and organisations acted as drivers to accelerate the introduction of strategies for driving re-use.

6.2.2 How do you pursue re-use? What role do local authorities and recent compliance measures play in managing re-use at your organisation?

These questions were posed to the organisations to discover their understanding and definition of re-use and the role of local authorities in instigating re-use behaviour.

Interviewees were asked questions regarding their specific understanding of re-use, such as:

> the government definition of re-use is 'buying and selling whole used items, possibly after washing or minor repair' (other terms used, particularly in the construction sector, include 'reclaimed'). Does that correspond with your definition?
>
> What is the specific understanding of re-use in your organisation?

The interviewees were also asked about 'the role of local authorities regarding managing re-use at your organisation'.

This helped to gather the vanguard organisational perspectives regarding re-use, and enabled me to gain an understanding of the role of the local authorities as drivers of re-use behaviour. The retailers, manufacturers and TSOs were also interviewed regarding their management of unsold stock, by instigating discussion through the probing statement 'It must be incredibly difficult to predict how much stock you are going to sell. You want to reduce the waste'.

This wording of these questions, and the research-quoting and probing in response to the respondents' answers regarding the waste hierarchy and zero waste to landfill within their organisations, demonstrated the centrality of the high means control variable of CEBA. In this way, it is possible to link the semi-structured interview questions with CEBA variables to analyse the answers in line with the research questions.

The way organisations pursue re-use varies from one sector to another. Table 6.2 demonstrates how each sector pursues re-use with a shared intention of having social, economic and environmental benefits.

Table 6.2: Ways of pursuing re-use

Sectors	Organisations	Perceptions about re-use
Retail	R0, R1, R2, R3, R4	Unsold stock as re-usable as it has economic benefit; re-use is not the same as the government defines it.
Construction	C1, C5	Re-use is not just limited to the government definition, but also about the use of items for both the same and different purposes; re-use is not just a matter of environmental saving but also concerns cost saving.
Waste services	W1, W2	Re-use, if mandated, will be a risk because it is primarily a recycling and recovery sector; re-use is the same as the government definition.
Manufacturers	M1, M10	Unsold stock is considered re-use or waste, depending on the space, logistics and suppliers; re-use is not just the use of items for the same purpose, but also about remanufacturing or reprocessing for the same or different purposes.
TSOs	T1, T5, T6, T7, T8, T9, T10, T11	Re-use is about using items for the same purpose, preventing valuable resources from being down-cycled, and using them for up-cycling: essentially, use for any different purpose.

The variations in perception about re-use represent an ambiguity in the understanding of re-use. For instance, manufacturers and TSOs relate the meaning of technological practices such as reprocessing and remanufacturing with the term re-use. This association of technological waste management practices with re-use – which is a purely human action solution – is also identified in the literature review (Section 2.3.1).

The variations and inconsistencies in perceptions about re-use are further evidenced by the following examples. For instance, T7 said:

> there is a need to have greater clarity within the industry about re-use. So, as much as the government needs to refine the definition, they need to invest more time and resources to make re-use understood within the industry. Even within the waste industry and for experts in the industry, there is a considerable lack of understanding about 're-use'. The term 're-use' is frequently misunderstood as meaning 're-process'.

The aforementioned misconception about the term re-use can be seen in M1, where the practice of reprocessing material is understood as a form of re-use. M1 indicated:

> we do not take good materials and re-use them, but we take some damaged items which historically would be classed as waste, and then that will be sent to re-use and recycling facilities for someone else to use it in some form.

This misunderstanding was identified in the literature review, which indicates that manufacturers consider reprocessing solutions to be a method of re-use (Section 2.3.1). However, this thesis argues that the technological intervention (use of the 'science first' model) means that reprocessing is firmly positioned within the category of remanufacturing, rather than being a genuine method of re-use.

Another example that indicates ambiguity regarding the understanding of re-use is M10, the manufacturing supplier of R0. M10 provided their opinion on re-use as:

> the re-use definition given by the government should be expanded to include the fact that the products or components (providing their physical composition does not alter) can also be used again for alternative purposes through reprocessing.

They nevertheless indicated that zero waste to landfill is not embedded within their organisations, but do nonetheless claim to 'adopt a landfill avoidance ethos and all recyclable material is extracted prior to any material going to disposal'.

The above evidence indicates that for M10, recycling is currently a normative behaviour, and they are not automatically looking for strategies to engage with re-use activities.

The above-mentioned perceptions of the interviewed manufacturers further confirm the argument from the literature that, by carrying out recycling and reprocessing activities, they feel that they are fulfilling their obligations and duty of care in regard to waste management. This is the case because they feel they are meeting the standards mandated by the waste directive (the most current version at the time of writing)..

Further differences in perceptions of re-use were also found in organisations from other sectors. For example, R1 said:

> re-use is quite tricky at the moment, which is about the circular economy at the moment, which is a kind of high-level strategy rather than more practical. We define the unsold food products as waste. Other people may define it as re-use, but we consider it as waste if there is government legislation to promote re-use. Whether it will work or not will depend on how it is framed.

On the other hand, C5 said:

> re-use to us is not only about environmental savings, but not putting [material] out for waste is also cost savings. We consider any form of re-use [to be re-use] if it is in the same format and is not reprocessed, even if it is used for a different purpose. The ultimate product can be used for different application.

In contrast, W1 indicated:

> the best way to look at it is: re-use now is viewed as an opportunity with customers, it is not viewed as a risk. But if it is mandated it will become a risk because we would probably need to scope out everything potentially that could be re-used and check that we are doing the right thing with it. So it would prompt an assessment of what we are doing.

The above evidence shows contrasting findings. On the one hand, R1 sees re-use as a merely theoretical construct, and they are uncertain about it becoming part of compliance via high means control (Section 3.5.1.1). In contrast, C5 seems to be sure about their re-use activities and claim to have seen both economic and environmental benefits from re-use. Nevertheless, they suggest amending the current definition of re-use by indicating the re-use of items not just for the same purpose but also for different functions. W1, a waste service organisation, meanwhile see re-use as a risk if it gets mandated due to their business model (at the time of research), which is purely focused on recycling and recovery measures.

The argument of re-use not gaining priority is further validated by other findings. While M1 considers unsold stock to be re-usable, they nonetheless indicate that re-use materials take up space and tend to become an economic liability. Therefore, they prefer to either dispose of the material as waste or send it to charity. The latter option depends on the amount of unsold stock, because most of the time local charities can take only a small amount. It also depends on the material in question: it may not be possible to re-use older materials, as they might not comply with changes in health and safety regulations, such as with flammable furniture and electrical goods.

This indicates some challenges to re-use activities being considered a viable option in moving towards an absolute decoupling among the interviewed manufacturers. Among these challenges are the failure to obtain intended economic benefits (lacking Behavioural maintenance) (Section 3.5.3), and the risk of non-compliance (lacking high means control) (Section 3.5.1.1). This demonstrates not only an interdependency of CEBA categories and variables but also reiterates how the breakage of links acts as a barrier to behavioural change and its maintenance (Section 3.6).

Despite these reservations, the manufacturers agree that, if the government was to enforce re-use as a regulatory measure, they would comply (high means control), and therefore growth in the area of re-use would occur. Nonetheless, M1 emphasises that it 'all depends on the type of materials'.

'Type of materials' was also indicated by T7, a local-level TSO, as one of the mechanisms to promote re-use. According to T7, 'if there is government legislation to promote re-use, it needs to be done by identifying more materials that can be re-used'. The importance of 'type of materials' was also identified by the retail and construction sector businesses interviewed, which emphasised the particular type of materials that are considered as part of re-use activities (examples below).

R4 has piloted a scheme in collaboration with T1 to provide customers with the facility to give away their used clothing for re-use to charities or for recycling to waste service organisations. R4 said:

> 'Love your clothes' introduced by WRAP is part of our action plan, and all staff are aware of it. The mechanism of worn again and worn again overseas or refurbished/refashioned/up-cycle if damaged. Partnership with T1 is nice for the moment because it works for customers, since they like to donate clothes to charity.

R4 identifies textiles as one of the kinds of materials that are being donated for the intended purpose of re-use. However, relating donation (a purely human action) with mechanisms such as refurbishment and refashioning (in the form of remanufacturing), and citing these activities as a part of re-use, demonstrates inconsistency and uncertainty in their perception of what constitutes re-use.

On the other hand, R3 and R0 indicate evidence of re-use through purely human action (including donations and minor repairs). These two companies have developed a relationship with T11 by taking back bulky furniture and waste electrical and electronic equipment (WEEE) items in exchange for customers buying new bulky and WEEE items. This perception of re-use is evident in R3's claim that:

> in terms of re-use, we make sure that we cannot resell the take-back items – they have to go to charities. The items that remain unsold in our bargain corner, which we do not tend to [send to] waste, is donated to the schools and charities we are partnered with. At least once a month, we have charities or schools coming for re-usable materials.

Along similar lines, R0 indicated:

> for unsold stock, the priority is to reduce the price so that someone buys it, and the second thing is giving away to charities or social enterprise. … [O]ne of our partners…takes re-usable electrical and electronics materials from us. They have engineers, and they repair what they can, and sell that in the local secondary market [or give it to] the local authorities [to give to the needy]. Around 10 per cent of materials are finding a second life through this. The partnership with T11 is ongoing. One of our partners…uses carpet and underlays off-cuts for re-use.

Another material, food, was indicated by R6 as having re-use potential. The content analysis shows that R6 has partnered with T4 for distributing surplus food to charities (Chapter 5).

The evidence thus far indicates that clothing, bulky furniture, WEEE and food are 'types of materials' for which both the mechanism and the facility for re-use exist (mostly through donations and second-hand sale). Thus, it can be concluded that, depending on the type of materials, it is possible for retailers to engage with re-use behaviour that goes beyond the unappealing equilibrium (i.e. gaining no profit and incurring no loss) and provides benefit to the TSOs. This also supports the argument made by M1 and T7 that the type of material is a crucial factor for facilitating re-use behaviour.

Findings from the above-mentioned evidence also indicate that investment in the redistribution system saves associated costs involved in returning surplus stock. It avoids transportation and disposal costs, delivers environmental and social benefits, and increases sales of new items by attracting customers through positive engagement with social benefit and good causes. This finding reiterates that a newly formed behaviour can be maintained to attain social, economic and environmental benefits, which represents a Behavioural maintenance variable of CEBA (Section 3.5.3). Also, organisations are investing in compliance measures (high means control) and Engagement/action (Section 3.5.2) to achieve the desired goal. This demonstrates an interdependency of CEBA categories and variables.

The financial benefits of re-use are also evident in the construction sector. Construction sector companies indicated that, for them, re-use provides the most significant economic and environmental savings. Therefore, to promote it further, they are investing in logistics for transporting the items from sites to charities or communities.

An example of this is illustrated by C5, who indicated that 'our main target is that 98 per cent of waste must be diverted from landfill'. To achieve this, re-use plays a vital role:

> re-use to us is not only about environmental savings, but not disposing of materials for recycling and landfill also provides substantial cost savings. We consider any form of re-use if it is in the same format and is not being reprocessed, even if it is used for a different purpose. The ultimate product can be used for a different application.

Similarly, C1 indicated that they do not use the government definition of re-use. They stated that they would consider any form of re-use if the product is in the same format and is not being reprocessed, even if it is used for a different purpose.

The above evidence of inconsistencies and uncertainty in understanding re-use is not limited to the for-profit sector, but can also be found among TSOs. The TSOs interviewed indicated that, in essence, they share the definition of re-use given by the government. Nevertheless, they also provided suggestions for extending the definition.

T6 indicated that 'we consider any form of re-use if it is in the same form and is not being reprocessed even if it is used for a different purpose that is just as good'. T7 indicated:

> I think people can re-use waste. I think something has become waste and you then apply a re-use technique and it stops being waste. The point where the material becomes unwanted means that it can be re-used and once you re-use it, it is no longer waste. There is a need to have greater clarity within the industry about re-use.

Along similar lines, T8 illustrated that ‘re-use is not limited to the definition given by the government. Refurbishments by re-using construction materials are also considered as re-use’.

Those retailers, construction sector companies and TSOs that perform re-use activities in a purely human action manner, either through minor repairs, donations or via second-hand sales, recommend the adjustment of the DEFRA (2013b, p.5) definition of re-use. For instance, some of the participants suggested extending the definition of re-use to ‘re-using materials in any form and for any purpose, as long as it is not reprocessed’.

Thus far, the research has demonstrated that re-use behaviour is facilitated in various forms depending on the type of materials in question, as well as TSOs’ collaboration with corporations. The differences in perceptions of re-use, and suggestions regarding the need to revisit its definition, indicate that the idea is in its nascent stages of development and is far from becoming a norm.

Another enquiry that formed part of the semi-structured interviews involved the roles of local authorities in facilitating re-use behaviour at the leading organisations. The evidence indicates that, unlike at the household-level, local authorities play no direct role in facilitating re-use at the organisational level.

For instance, R4 said that ‘local authorities do not play any role in re-use projects. They play a role with our customers in the take-back scheme at household-level’.

While C5 indicated the importance of local authorities, this was related to the government guidelines and not directly regarding the local authority:

> council as part of government say [we] need to do the BREEAM and Green building certification to say it is very good. Under BREEAM, there are waste criteria as well, and local authorities drive that. Their role is to enforce the BREEAM assessment, which will encompass everything to deal with waste. So it is quite a big role because at the end of the day you have to meet a certain amount of credits and you need to tell how you are meeting those credits.

W1 said that ‘local authorities are our customers. Local authorities, some of them want us to show the social values we bring as part of our contract (any part of business). It is at the bidding stage’.

Similarly, waste service organisations interviewed indicated that local authorities play no critical role in their re-use management. Nevertheless, the interview results indicated that

it is the TSOs that act as key facilitators and local authorities are fundamental to them, as TSOs drive local authorities to generate funding for re-use. T10 indicated:

> theoretically, local authorities are the core of re-use in London. Because lots of items come from local authorities and they are fundamental in prevention and re-use. They are one of the cornerstones of our engagement strategy. Financially, the local authority is about 1/6th of our turnover. By general priority for us they are probably number one.

Similarly, T11 emphasised their engagement with local authorities by indicating that 'we are very strong in lobbying and giving advice to local authorities for engagement towards better waste management'.

This supports the analysis in the literature review (Section 2.4) that the mechanisms surrounding re-use are very different at the organisational and the household-level. Specifically, the role of the local authorities is very different, and although they are crucial at both levels, they do not play as direct a role at the organisational level as they do at the household-level. Instead, their level of interaction and participation is heavily influenced by the actions of the TSOs.

6.2.3 How do you measure re-use achievements? What do you look for in an organisation to consider it as a potential re-use partner?

To explore these issues, interviewees were asked questions such as: 'in your sustainability report, you provided substantial evidence of achievement about waste recycling, recovery and some on re-use. How do you measure achievement?' Questions regarding organisational partnership were quite straightforward. These aided in gathering organisations' re-use achievements and finding the mechanisms and barriers in developing and maintaining partnerships for carrying out re-use activities.

This section demonstrates the process of grouping two variables of CEBA to facilitate a close analysis. The probing in response to the respondents' answers demonstrates a close connection with the high credibility variable of CEBA, namely, the achievements, guidelines and innovations within organisations. Furthermore, the wording of the questions regarding partnership demonstrates a close connection with the Behavioural maintenance category, namely the measuring or pre-assessment process within organisations. In this way, it is possible to see how the semi-structured interview questions can then be linked to the CEBA categories and variables to analyse the answers.

The construction sector accounts for 50 per cent of waste production in the UK (DEFRA, 2015c). According to the two participants from the construction sector, they primarily measure re-use performance through economic benefit, which has a resultant social and environmental benefit. C1 indicated a 2012 project as one of the best examples; 'the idea was that everything should be designed so that it can be dismantled and re-used'. C1 managed to achieve the re-use and recycling of 99 per cent of materials, with only the remaining 1 per cent sent for energy from recovery. They also indicated that their carbon emissions declined by 35 per cent between 2010 and 2013.

C5 provides another example: they introduced a swap shop for all of their sites in the UK:

> it is an online port where each site provides information on the materials left at the site. Those sites that need any of the materials will get the notification and can go and pick it up. It is all over the UK, and each site pays themselves for the logistics. The remaining materials go to our warehouse for future re-use. This is a mechanism of re-use we carry out at the end of each project. In one of our recent projects, we managed to divert 10.8 tonnes of waste from landfill to re-use.

This evidence shows that C5 measures their re-use achievements via the amount of waste diverted from landfills to re-use. Nonetheless, they indicated that the main achievement lies in economic benefit. Justification of re-use activities in terms of economic benefit is further evident in the C1 interview. Unlike C5, C1 identified operational activities (such as time, space, and logistics) as a barrier to re-use becoming a regular practice:

> there isn't enough time to either identify a charity once a year, or even if we do it might be that they cannot take the material for a period. We have got nowhere to store it, so it is kind of…the luck of the draw as to whether…the timing is right for them to be re-used.

This demonstrates how a lack of resources (in the economic variable of CEBA) (Section 3.5.2.2) can act as a barrier in behaviour change, thus reiterating the importance of a single category and variable of CEBA (Section 3.6).

With the challenge above, C1 suggested:

> within the construction sector, there is a lack of a centralised re-use system. Such as an organisation that could research the re-use market, [to save us the time of] looking for the re-use supply chain. This can fill the gap between the construction and local-level TSOs and thus enable facilitating re-use activities.

There are examples of construction organisations performing re-use in collaboration with TSOs, such as C5 collaborating with a TSO to crush and re-use plasterboard as cavity insulation. However, these examples do not represent a widespread and cohesive re-use performance, and organisations need to invest their own time and resources to search out methods for re-use.

Interviewees' suggestions indicate that the construction sector requires a regional or national-level TSO, dedicated to researching and providing services for the re-use of construction materials either through government funding or supported by the construction industry. Such an option appears likely to be viable and effective, given that it exists among retailers, manufacturers, and public sector organisations.

One such example of a readily available national-level TSO as a point of contact for re-use is T11. It is one of those umbrella organisations or charities that evolved from the government body 26 years ago. It is active, and employed by re-use operators, charities and social enterprises to receive re-use certification.

T11 have 300 registered UK re-use organisations. Their core aim is eliminating UK poverty through the re-use of bulky furniture and WEEE items. Because T11 is purely a re-use-focused organisation, they are a single point of contact for many retailers, manufacturers, or public sector organisations, and they direct the organisations to local charities, social enterprises or communities for donating and buying re-use furniture or WEEE items.

In the interview, T11 indicated that to attract and strengthen partnerships with the public and private sectors, they have a system to test the reusability of products and their components before passing them on for re-use. This is known as the quality assurance scheme. It assures reliability for corporations and means that they often choose T11 as a first option before resorting to sending the materials for recycling, recovery or disposal. It is an effort to introduce themselves as an attractive agent that can compete with the recycling and recovery market. T11 said:

> today we are proud to say that we are neck to neck with the waste companies in managing re-use with excellent infrastructure, logistics and services. Also, we are ahead of the waste service sector regarding providing a social benefit. To achieve that, we are as professionalised as any other corporate.

T11 further indicated:

> our achievements have to lead to long-term partnerships with the business sector; R3 and R0 being successful examples. R3 are the founders of the take-back scheme. Collaboration with T11 helped corporate to handle the re-use materials, and they started seeing it as an environmental benefit and providing support to the community through re-use. R3 is pushing the social agenda to make sustainability a normative behaviour within their organisations. R0 is at the initial stage, and we are collaborating with many other corporations to make re-use a norm for social profit.

It is revealing to explore the achievement of T11 and their collaboration with a retailer (R3) in more detail. R3 indicated that, by collaborating with T11, the take-back scheme seemed to work well as a re-usable business model. According to R3:

> the furniture take-back scheme happens at least every week. The ongoing partnership with charities and TSOs is now centralised rather than being managed at a local-level. To maintain this behaviour, any new member of staff goes through a general induction process, and sustainability induction is part of this. We share our requirements with our co-workers.

The above ongoing relationship between T11 and R3 suggests that, to appeal to corporations, any re-use partnership must offer a benefit to corporations in terms of saving their time and resources, making re-use a preferable option to recycling or waste disposal. Nonetheless, T11 is not the only re-use-focused organisation that corporations have partnered with to make re-use a profitable business model.

R0 and R1 also indicated a national-level food re-use organisation called T4 as a potential partner. T4's core aim is to redress food poverty and reduce food waste. To do this, T4 partners with retailers and manufacturers to source the best quality surplus food to people in need. To keep their distribution service strong and profitable, they invest in commercial trading and charitable activities. Most of their income is earned through fundraising and is self-generated.

T4 engage with regional centres, which are run by third-party charity organisations, as a way of offsetting the risk posed by the fact that many of the significant retail supporters are competitors. This is a significant strength of the T4 model: despite the relatively small size of the organisation, they have multiple links at the local-level with regional centres that are run by third-party independent charities. For instance, in London, they redistribute food for over 200 charities and community groups.[27]

[27] This information is gathered from the T4 website. Due to time constraints, T4 was unable to maintain their initial regular contact. Therefore, I obtained as much additional information as I could from their

An example of T4's collaboration with a retailer (R1) is as follows. R1 indicated:

> T4 have good infrastructure and logistics. They understand our model since they are national, but local organisations might not necessarily understand our operations and system. Although re-use of food items is challenging, we always make sure that none of our food waste goes to landfill. From the store, all of it goes to anaerobic digestion (AD), and from the depots, it goes to T4 for re-use purposes.

This demonstrated that a centralised TSO system works well with food, furniture and WEEE materials.

There is also an opportunity for the stakeholders to develop a similar system for construction materials, if not at the national-level, then certainly at the regional one. This is demonstrated by the short-term achievements of a similar regional TSO, T10. Prior to liquidation, T10 showed some progress in the re-use of furniture and WEEE materials. This shows the potential practicability of the model for the construction sector, if the challenges that led to their liquidation are addressed.

T10 (now liquidated), which was a London-based re-use organisation, included among its registered members charities and social enterprises all over London. They were one point of contact for the re-use of furniture and WEEE materials. In the interview, they indicated:

> we have established and co-ordinated the T10, which comprises like-minded charities and social enterprises operating in and committed to growing the re-use market. Collectively, we have increased the market and demand for re-used items in London and have created many jobs, training and volunteering opportunities. Our mission is to divert re-usable items from landfill and incineration by creating collaborative and effective solutions with the public, private, and social sectors.

They also indicated:

> alongside creating jobs, training programmes, community events etc. we use a particular measuring tool where they have a database to calculate and measure re-use, recycling. They capture all the details.

The logistics service, and the fact that they were prepared to collect all furniture and WEEE materials, made them stand apart from their high street competitors:

website. The availability of the information on their website has provided a useful insight into their systems and procedures.

> our competitors are more of high street charity shops. The competitors are very picky about a collection. They will only collect good quality items. What we do is, we take all the products – we take everything from the customers. We re-use what we can, and we recycle the remaining that is slightly different from what we do and what competitors do.

T10 had advanced beyond simply being a network connecting re-use charities and social enterprise. By providing clearance and logistics services, T10 had created a limited company image to attract corporations. This transition from being merely a network to becoming a limited company was a deliberate choice, aimed at fulfilling a need. The additional services added as part of the limited company portfolio involved commercial expansion of the hotline service; 12 re-use projects across 9 organisations; computerised product tracking systems deployed across 11 organisations, aimed at reselling the items online; and the opening of seven new retail outlets.

The achievements of re-use are not limited to significant regional- and national-level TSOs. Local-level TSOs also play a crucial role in promoting re-use behaviour at the organisational level, and regional- and national-level TSOs are dependent on local-level TSOs to make their model more accessible, appealing and profitable to corporations.

T6 (which is a registered member of T11) is a local-level TSO, providing a repair and re-use service for bulky furniture and WEEE materials. Their model works by enhancing profitability to the businesses involved by assessing the value in the waste, the cost of transporting it to where value can be reclaimed, and the value of the materials when they arrive at that location. The equation of their operation is as follows:

> the value of waste vs the value of where it could be [reclaimed] minus the cost of the logistics divided by the number of the people involved in that transaction. The uniqueness about our business model is it is high-value up-cycling. This place is about high-margin low-volume transactions. It means high profit through fewer sales. High-margin appeals more to customers than low-margin outcomes.

T6 are one of the ongoing partners of R0, because of their logistics, infrastructure, and location. R0 said that ‘accessibility and being local is much more sustainable because you support the local industry where you trade from’.

Similarly, T8 (also a registered member of T11) is another local-level TSO that repairs, refurbishes and re-uses construction materials. They are one of the critical partners of C1. T8 indicated:

> since 2014, we have been committed to communicating the re-use initiatives and their benefits among staff, through training and to the supply chain, through marketing. There is room to do more and collaborate with other construction, recycling, logistics, and insulation businesses. In 2012 we collected ten cubic metres of Rockwool insulation from the [project], half of which has been re-used locally. In 2014 we generated income of £5,153 from up-cycling and selling donated re-use materials.

Another such local-level re-use organisation, which is committed to re-using wood, is T5, which is a registered member of T11. They are also partners of C5 and several other commercial and non-commercial organisations. Their motto is

> to go the extra mile and not just settle for having the waste recycled, but try to have it re-used. In 2013 we succeeded in re-using 2,720 tonnes of waste wood. We aim to save resources by rescuing and re-using waste timber that would otherwise be landfilled (or at very best down-cycled into woodchip). We also aim to create sustainable jobs and training and volunteering opportunities for local people – especially those who might find it difficult to get into or back to employment.

T9 is another local-level TSO and an independent charity that is focused on the repair and re-use of WEEE materials. They indicated:

> on behalf of society in general, we belong to the largest business networking organisation in the world (BNI) and are constantly evangelising the need and effectiveness of re-use – and more specifically the benefits to the disadvantaged in getting their lives back on track in participating in our work. People who could never afford big brands can purchase low-cost technology and also provide benefits to the environment. We firmly believe that re-use is embedded within the society's ethos and generally issues from mid- and higher-management levels, which then is incorporated into normal practice.

One of the T9's retail partners, R2, indicated that 're-use is considered long-term as it is usually cheaper than recycling'.

There is therefore evidence that corporations partnering with either big TSOs (regional and national-level) or local-level TSOs can obtain distinct benefits regarding accessibility, profitability and sustaining the local community. One of the common mottos for corporations focuses on gaining profit. In contrast, the ethos of TSOs is typically geared towards gaining partnerships with corporations to generate social and environmental benefits. Nevertheless, as is demonstrated by these examples, these seemingly irreconcilable differences do not always have to generate conflict.

Re-use is seen as a solution in such collaborative contexts only when it fulfils the aims of both the corporations and the TSOs. Similarly, it only becomes viable when the various factors that organisations take into consideration are accounted for. Behind what may appear to be a simple solution, there is a more complex range of factors that corporations assess.

For instance, reputation is one of the key factors that corporations consider before establishing a partnership with TSOs. They review the TSOs' environmental policy, and tend only to proceed if the TSOs provide evidence of following the zero waste to landfill approach embedded within their system and procedure. This represents a combination of the Communication (high means control) and Engagement/action (partnerships) categories of CEBA for carrying out monitoring (a Behavioural maintenance variable (Section 3.5.3)), thus, reiterating the interdependence of CEBA categories and variables.

The following paragraphs illustrate some of the examples of the pre-assessment process mentioned by corporations interviewed.

Among the retailers, R0 indicated that 'we check whether the organisations we deal with comply with waste legislation and regulations', while R1 indicated that 'while choosing TSOs, we check the reputation. Essentially, we need to make sure that they are a responsible organisation, managing waste in the way they say they manage it'. Similarly, R2 indicated that they partner with the TSO that has clear re-use objectives within its policy. R0, R1 and R2 also all identify compliance checks as being part of their quality assessment process. This shows the dependency of a Behavioural maintenance variable on a high means control (a Communication variable of CEBA).

Providing excellent bespoke logistics and operational service is also identified through the interviews as one of the essential criteria alongside reputation and compliance. For instance, R3 indicated:

> our assessment before partnering is looking to the causes to make sure it matches with ours and whether they are a registered charity. Also, it is important that they have good logistics and operations.

Similarly, R4 indicated:

> the key thing we are looking for there is speed. We want a partner who can – from a commercial point of view – get that product out the door. We want them to make good use of it, but we want them to have that flexibility and responsiveness. We can phone

> them up, and they can [ensure] that the operation runs easily and quickly and does not cost us any money.

The above evidence indicates that creating savings across the board, reliability, being a well-established charity and delivering quality services are among the factors enabling collaborations. These factors are further indicated by the companies in the construction, waste service and manufacturing sectors. For example, C1 indicated:

> we do not discriminate. It is important to establish that they are a registered charity. In terms of what that charity does and how they function, we do not do any research to find anything wrong with them. We meet them in an informal way to know about them. We do not want to go with those who have any political affiliations.

W2 said that the main things they look for in TSOs are 'joint aims, strategic thinking', and the ability 'to deliver'. M10 identified 'quality in relation to successful segregation at source and in relation to material presentation and paper mill compliance' as the crucial criteria.

Thus far, the findings illustrate that re-use can make a contribution in moving towards an absolute decoupling, as it provides social and environmental benefits while maintaining profitability for organisations. However, this solution is only viable under the right circumstances, when a mutually beneficial partnership can be formed. Collaboration is a key mechanism for encouraging re-use behaviour, but whether this engagement and these activities are long-term or whether the organisations incur barriers when establishing re-use as normalised activity needs to be further discussed.

6.2.4 How optimum is the collaboration with TSOs? Is re-use considered a normal practice within your organisation?

This section demonstrates the process of grouping two categories of CEBA (Engagement/action and Behavioural maintenance) to facilitate closer analysis. The respondents' answers indicate the centrality of the Engagement/action variable of CEBA in their emphasis on the economic and non-economic benefits within organisations. The wording of the questions regarding the longevity demonstrates a close connection with the Behavioural maintenance category of CEBA, namely regular monitoring within organisations.

The manufacturers and the waste service sector demonstrated their view of re-use as a short-term practice, as it has no profitability in its current form. For the manufacturing

sector, re-use materials take up space and tend to become an economic liability. For example, M10, a packaging manufacturer, indicated:

> re-use to us can be a threat as well as opportunity in the long run. In the majority [of cases] we provide single-use transit packaging cases and would then collect the cardboard as recovered fibre and put it back into the recycling system, so re-use isn't always an option for our clients. And if it was it would obviously mean that we were supplying less, hence a threat. However, the opportunities would arise in the area of new client potential as we can work on specific product design for particular applications and could adapt to design packaging for potential re-use in certain specific situations. As part of our sustainable sourcing we implement a system of auditing based on the key sustainable sourcing principle; perform risk assessments of suppliers regarding food safety, technical datasheets, material safety, substances of high concern; and implement our key sustainable sourcing principles with our suppliers.

The above evidence suggests that, for M10, facilitation of re-use is primarily dependent on the client requirements. At the current stage, they consider re-use as a risk because of the existing manufacturing system, which only considers recycling and recovery of the packaging materials. Nevertheless, they claim to invest in an opportunity to adapt a design packaging for potential re-use while following their sustainable sourcing principles. This indicates a dependency on external peer pressure via high attractiveness (Section 3.5.1.2) for changing behaviour and making it part of the compliance (high means control) (Section 3.5.1.1), thus reiterating the interdependency of CEBA categories and variables.

In contrast, M1, a flooring manufacturer, does not see re-use as a risk. Nevertheless, they also agree with the argument that re-use is not viable in its current stage. They said:

> we as manufacturers produce more than 50,000 sq/m of flooring (as waste) of different kinds every year. The re-use people I work with in the UK, if I go to them and say that we have around 50,000 sq/m of flooring that is sorted and is required to be cleaned for re-use and I will pay gate fees for that as an alternative for recycling and incineration. They will save [they] cannot [handle] that amount of material. The problem with this industry is to match up with our scale. They provide a service, but the amount they handle is a fraction of the total. I do not think it is a closed-loop system – it is absolutely not. I would be pleasantly surprised if they handle as much as one to two per cent all over the UK. The TSO cannot be a threat to the recycling industry because they are very small; they are technically not capable. The first questions are where they will store the material? The re-use will organically grow, but they are never ever going to reach the level of the recycling or recovery industry. The circular economy involving reverse logistics will go [i.e. develop] in the long run, saying that there will be a niche of people

> who will be doing re-use. We are heavily trying to move our way towards the circular economy. In future that will be the way forward. They need to carry out the good work.

M1 indicates their facilitation of moving up the waste hierarchy and adapting the principles of circular economy (such as reverse logistics and closed-loop supply chains). However, they argue that re-use organisations (predominantly TSOs) can never reach the level of the recycling and recovery industry because of the lack of economic benefit, space, time, logistics and corporate thinking. Therefore, they do not consider re-use as a profitable long-term option as part of their business model, but do consider it as an ongoing activity that can continue to work for good social causes.

The above demonstrates pre-assessment/measuring via a Behavioural maintenance variable of CEBA (Section 3.5.3), leading to the identification of re-use as lacking in resources (an Economic variables in CEBA) and creating a value action gap (Section 3.5.4). This again shows the importance of every category and variable of CEBA for facilitating behavioural change.

Both manufacturers (M10 and M1) indicate that re-use is not a profitable option in its current form, and therefore do not consider it as a regular practice at present. Among waste service organisations, W2 indicates that re-use collaboration is at the conceptual stage. W1 indicated:

> for us what makes us money is recycling and energy recovery, so that forms the key part of our business, whereas re-use, there is not necessarily money in that. That is why we are working with social enterprises to give it and provide social value. The ongoing re-use projects are not something we are keen to look at. If there are any issues, that is dealt with at the local-level. Any social enterprise we have dealt with is very good, nationally established social enterprises. I imagine at the local-level they probably are not so good. Right now the re-use materials are of not huge quantity. With paints, we are sending it back to manufacturers for remanufacturing. The TSOs need to match what they do to what the business needs so that will be saving in money and will add to social value. Location is important; it is about being pro-active in understanding corporate environmental and social objectives and aligning with them. [It is also important to] [s]peak the language of corporate [organisation].

Similar to the manufacturers, the evidence from waste services also shows that recycling, recovery and disposal are the currently dominant practices, and suggests that re-use is not seen as an economically viable option. Nevertheless, W1 indicates their willingness to achieve societal benefits through re-use. In order to do so, they suggest that, along with

environmental and social benefits, the TSOs (re-use supply chain) need to have the factors of credibility, reputation, localism, corporate thinking and economic benefit embedded within their practice.

In the retail and construction sectors, while some organisations seem to view re-use as a long-term activity, others have reservations regarding its longevity. For instance, R0 demonstrates the barriers to re-use practice by giving a specific example:

> the real problem that we found in re-use is, for instance, if we talk about a sofa. The sofa comes back from the customers when they bought a new one from us, and T11 pick it up from us. They cannot sell it at all unless it has labels on it, which shows its makeup requirement. [This constitutes the product label, which provides details of the materials, manufacturer and composition of the product.] That has been a real problem, so we are working with manufacturers to put one more label underneath the sofa, since no one will peel the label from underneath. That is the same with carpets. So we need a uniform way of identifying what the makeup is. It is at the manufacturing level where the government needs to start implementing re-use regulations, because they have to manufacture with a thought of how easy is it to repair, upgrade, to replace damaged parts. Then suddenly the whole industry of repairmen would be reintroduced. That would be good for employment, industry – everyone will win.

Similar to W1, R0 also suggests that the instigation of re-use needs to come from their supply chain. However, unlike W1, which suggested measures needed to be taken by TSOs, R0 suggests that manufacturers should be the key facilitators. While explaining this suggestion (with the example above), R0 presented the existing barrier with re-use practice, in particular with the second-hand items that come through the 'take-back' scheme.

R4 similarly shared certain barriers to practising re-use, though in their case it is in regards to their partnership longevity:

> I think one of the challenges will [be that we will] always try and reduce waste and therefore, I think the volumes will probably decrease as we get slicker and smarter in how we run our business. If we want to increase even more clothes going back, we'd probably still have T1 in the mix because we do feed a large number of customers, as they like that…those going on to do good, but we will probably add complementary partners or options where customers can. Not every customer wants to do that. So for other customers who say I want to get my money back so I want to sell? Then we are looking at other ways that we could recover the items. We make sure that the fashion items are made with the intention of not lasting long so that they can be stripped down

> and re-used as material. We are thinking about design that fits the assembly. Our priority is looking for options that can prevent re-use by increasing the longevity of the product at the design level. But in terms of re-use, we are looking at rental subscriptions schemes.

R4 suggests that moving up the waste hierarchy towards prevention has the ultimate aim of increasing material longevity. They are investing in making sure that fashion items are made with materials that can be stripped down and re-used for other purposes. They are working on a design that fits this ultimate goal, and their priority is exploring various options that can prevent the need for re-use by increasing the longevity of items at the design level. This thus presents the narrowing down of existing re-use partnership with T1.

R1 indicates a similar form of barrier to their re-use partnership. They said:

> regarding the forecast, the partnership with T4 is in a bit of a dilemma. Since through our supply chain, we have been trying to reduce the amount of surplus which will reduce the amount of food going to T4. On the one hand, we will have an economic benefit, but it will lead to a reduction in social benefit.

The evidence above indicates that organisations are working toward preventive measures. One aspect of this is the streamlining of their supply and sales of materials so that they are left with less in the form of unsold stock. This strategy in itself would provide a long-term solution to waste management, and indicates an intention to move further up the waste hierarchy, but it is a barrier towards the growth of the re-use market.

C1 illustrates a similar form of a shift from the re-use of materials to designing out waste. They state:

> with T5 we are connected in the re-use and recycling of wood coming out from the construction site, which leads to social benefits. However, the partnership with them is not long-term since our priority is designing out waste.

Despite the above evidence presenting barriers to and a shift from re-use collaborations to designing out waste through prevention (top of the waste hierarchy), the evidence below demonstrates possible longevity regarding re-use behaviour.

For instance, R2 indicated:

> our partnership with T7 is long-term, and re-use will be an ongoing activity since it is usually cheaper than recycling. We are now also doing more with our parent company,

> on the delivery of the programme. The charity is involved in each of the goals. What stores are left with may be re-usable through waste donation.

Along similar lines, within the construction sector, C1 indicated that 'our relationship with T8, although it is not structured, it is long-term'.

Therefore, some of the retailers interviewed are investing time and energy into working with their supply chain manufacturers to produce effective alternatives aimed at increasing the longevity of their materials by designing out waste. Nonetheless, the 'take-back' scheme seems to provide an effective solution when working towards re-use and is therefore seen by retailers such as R0 and R3 as a long-term profitable business option, making T11 their ongoing partner. This indicates the dependency of the partnership – non-economic variable of CEBA (Section 3.5.2.1) on the 'take-back' scheme – high means control (Section 3.5.1.1) for maintaining re-use behaviour – Behavioural maintenance (Section 3.5.3), thus reiterating the interdependency of CEBA categories and variables.

This shows that re-use longevity depends on the type of materials in question. Clothing or textiles seem to offer better profitability by using a scheme aimed at designing out waste, while materials such as bulky furniture and WEEE items demonstrate re-use longevity and profitability to corporations.

Other such items that are seen to work well as part of a re-use solution are surplus food and construction materials. For example, C1 was investing in developing a re-use supply chain network, since most of their projects involve the stripping out of materials, making re-use a possible means of gaining a return on their investment, rather than sending the materials for recycling or to landfill.

C1 indicated that 'the types of [construction] materials that we donate can be visibly checked if it's ok and with regards to things like ceilings we would involve our trade contractors in the re-instatement of those ceilings for the charities'.

With regards to the redistribution of surplus food materials, T4 was unable to provide more detailed information through interview. It was possible to gather information from their website regarding their strategies and approaches to re-use. They are conducting a pilot study with a retail partner, R8, which is aimed at pioneering effective strategies for the re-use of surplus food materials. This evidence of T4 facilitating re-use is also evident in the R1 interview, a core food retailer, and R4, a mixed retailer.

The above evidence indicates that TSOs are aiming at eliminating re-use barriers among corporations to enable their partnerships to continue to deliver social and environmental benefits while maintaining profitability. Specifically, TSOs are aiming to avoid the value action gap (Section 3.5.4) to maintain a partnership with corporations (Engagement/action) (Section 3.5.2), to maintain re-use behaviour (Behavioural maintenance) (Section 3.5.3). Evidence regarding TSOs is expanded on below.

Out of the eight TSOs interviewed, three are large TSOs (international / national / regional-level), four are local-level TSOs and one is a third-party consultant. Of the four local-level TSOs, three are members of T11 (a national-level TSO) and one, which is outside London, is an independent TSO.

Among the three local-level TSOs that are members of T11, it has been identified that being a member of a national-level TSO offers them a distinct advantage of being more visible and credible, which helps them to increase their supply chain network. Nevertheless, they also work on their separate ethos and goals to make re-use a social enterprise activity and to encourage business supply chain relationships.

Among local-level TSOs, registration with the larger TSOs at regional and national-level plays a crucial role in promoting re-use as a business model. However, this carries a potential disadvantage for non-registered local-level TSOs in that it then becomes a challenge for them to maintain an ongoing partnership with corporations.

For instance, T9, the WEEE specialist TSO not registered with regional and national-level TSOs, has formed the re-use supply chain for R2. T9 indicated that their partnership seemed to result in equilibrium, gaining no profit and incurring no loss. This situation led to the end of the partnership. T9 explained:

> we enjoyed a good relationship with R2 but as the volumes of equipment increased [R2's] IT security manager became involved and decided that all hard drives had to be removed from machines being donated to us, which really reduces their value to us. They also have started using a large IT 'cradle to grave' company for the supply, management and disposal of IT equipment, so that their donations to us have decreased significantly over the past 12 months.

However, a different outcome is found in the case of the relationship between T5 and C5, T6 and R0, and T8 and C1. T5, T6 and T8 are registered members of T11 (regional and national-level umbrella TSOs), which has helped them to market and brand themselves. T5 deals with the repair, re-use and resale of wood waste, T6 with re-use and repair of

furniture, and T8 with re-use of construction materials. All three are recognised by their beneficiary, T11, which gives credentials and reputation among corporations.

T11 indicated that 'collaborating with the corporate is also a careful process. We [assess] their seriousness and motivation, the sustainability department, the CSR policies, their achievements criteria, the reason they want the collaboration and the impact in community'.

Evidence shows that all three TSOs are seen by their business partners as potential re-use suppliers, not just because of the social benefit factor, but also because they are viewed as having economic and environmental benefits which carry greater weight and status because of their links to the umbrella organisations.

For example, T6 indicated:

> through R0's green token scheme they gave us money and supported us as part of their initial partnership. Our membership with T11 is in marketing and branding and sometimes logistics. Our model works by providing the profitability to the businesses involved, which includes essentially how much value is in the waste, what is the cost of getting it somewhere [where] the higher value [can be reclaimed], and how high is that value when it arrives at that place.

Along similar lines, T7 said 'our partnership with R2 is optimum; we provide a service for which they pay. Yes, it is hopefully a long-term partnership'.

Based on the evidence gathered from the interviewees, it can be argued that in the long run local-level TSOs may struggle to provide the required re-use services to corporations. This is due to a lack of any of the following factors: space, resources, reputation, credibility, corporate thinking and logistics. Therefore, it could become difficult for local-level TSOs to emerge from under the shadow of regional or national-level TSOs and demonstrate their business models directly to the corporations. In parallel, regional and national-level TSOs also need a close connection and partnership with local-level TSOs. This is because localism is also a key factor for running re-use effectively, which can only be provided by TSOs in the local area.

In a broader context, re-use partnerships show a specific dynamic in the re-use TSOs market. In the business or corporate market, smaller organisations/businesses are increasingly crowded out or taken over by large corporations, and their share in the market grows ever smaller (Monbiot, 2000). In contrast, national-level TSOs require partnerships and must build links with local-level TSOs to make re-use the first 'call' for corporations.

Essentially, collaboration across different levels and sectors is the key factor for making re-use work, and the dynamic force in these collaborative partnerships is often the TSOs.

6.2.5 Messages

As part of the semi-structured interviews, corporations were asked to provide messages for TSOs and vice-versa. This was intended to help avoid misperceptions and facilitate clear communication, to help prevent the emergence of 'pluralistic ignorance', which can lead to the value action gap (Berkowitz, 2004). The intention is to present clear messages that could aid in filling the gap created by the different perceptions about re-use.

6.2.5.1 Messages for Corporations from TSOs

Cost is always associated with managing waste, regardless of whether the unused materials (waste) are donated or not. T6 emphasises this by indicating that:

> corporations need to remember that cost is associated with waste in this country; because they donate it, they should not think that it should not be paid for. It is a fundamental expression of how the organisation functions in managing their resources and thinking of it as the privilege of paying someone who is taking their waste is valuable. It inspires the employee and the supply chain.

The above message from T6 not only emphasises the cost associated with re-use, but also indicates that it is essential for corporations to value TSOs that take away their waste for re-use purposes via methods such as incentivising the TSOs.

The failure to value the services provided by TSOs, particularly those at local levels, is further highlighted by T8, who said:

> TSOs may be charities, but we should be given the opportunity to demonstrate their potential, as we do have robust processes and procedures and we use industry-leading data tools and have all the necessary accreditations in place.

The above message indicates that, despite localism being an essential element in operating re-use, it is still a challenge for local-level TSOs to make corporations trust and believe in their credentials.

This challenge is further stressed by T9: 'although we are charities or social enterprises, we expect to be treated with the usual commercial regard and terms – because we do not hide behind the charitable status'.

T10 summarises the concern by indicating that

> it is interesting that corporate see us as a charity that is why they give us stuff with that intention, but what is required is they need to see the value. Also, most people have the wrong perception of what is called re-use, as will they buy the stuff in the same condition? People will have different reactions. What happens at the business level is, to optimise their service, they handle their items to the extent they can and we are called in to handle the crap. The challenge for us is to present ourselves as a viable first call organisation rather than a fifth call organisation. So what they do is look up for waste organisations and then at the end when they are left with items they will look at charities as the last resorts.

From an inspirational perspective, T5 indicated that 'those who go the extra mile do not just settle for having waste recycled, they try to have it re-used'.

TSOs' messages illustrate the challenges they face in maintaining their partnership with corporations. Nevertheless, their motivation towards re-use activities for achieving social benefits demonstrates their willingness to meet the corporations' requirements for maintaining partnerships.

For instance, T11 said that 'with a core re-use ethos and determination to provide social benefit, we do everything possible to be a growing solution to an ever-growing problem and to benefit the community and the environment'.

6.2.5.2 Messages for TSOs from Corporations

The messages below indicate that corporations recognise the TSOs' motivation and intention towards social benefits. However, to maintain a long-term partnership for carrying out re-use activities, corporations have essential requirements of TSOs: reputation, credibility, corporate thinking, economic benefit, space, logistics and localism. While these requirements vary slightly depending on the type of re-use materials, the main motto and intention for corporations is cost saving.

M1 indicated:

> I think, …on the good side, that TSOs do provide an excellent service. However, they need to realise that regarding the volumes that they are getting through is too small to remain in the commercial world, which comes up with a bigger solution. Unfortunately, using their service tends to be in a dilemma, because when we as a corporate want to get rid of our materials, we look for big-scale options. Because right now most of it goes to recycling companies who can take it all and get it recycled. However, if re-use

> organisations come up on that scale and take all with them, then recycling will not have much to take away.

W2 indicated:

> more business acumen is something that TSOs need. Re-use could be seen as a long-term thing if the business sees any value, either for business or for the customer; it would be challenging to put the social value case over the business case. Any re-use opportunity that could save the business money would appeal because then the business would be assessing cost savings, balancing social values vs the value of recycling, recovery or incineration. Businesses will always place profit before social values.

R2 indicated that 'the TSOs need to match what they do with what the businesses' need, so that will be a financial saving and will also add to the social value'. R3 indicated that the factors most motivating to businesses are 'reliability, not sending stuff to landfill, being responsible and trustworthiness'. W1 emphasised that credibility and reputation are the factors that would motivate them, more than social value.

C5 indicated:

> TSOs need to look at innovative and economical ways for increasing the re-use market. Although we work hard towards achieving designing out waste, then also there will be some opportunities for them.

C1 indicated that saving across the board is the main motto of corporations, and that is what they look for in any organisation with which they collaborate.

Taking an encouraging stance, R1 indicated that 'corporations are open to new ideas that could save money; nevertheless, reputation and quality are key'.

6.3 CONCLUSION

The semi-structured interviews findings and analysis confirm the complexity associated with pro-environmental behavioural change (Chapter 3) by demonstrating the interweaving of individual and organisational behaviour and also presenting the interdependency of CEBA categories and variables. In particular, drivers toward instigating re-use behaviour among organisations corroborate the arguments of Campbell (2007), Cleek and Leonard (1998) and Thomas *et al.* (2004) regarding the effect of individuals on groups or organisation.

The interviews identify the economic profitability of re-use as one of the driving forces for corporations to consider re-use as a viable activity through which to collaborate with TSOs. Reputation, credibility, corporate thinking, economic benefit, space, logistics, and localism are also among the key criteria that corporations' consider on a regular basis for maintaining re-use partnerships.

There is, however, significant variability in views from one sector to another regarding the notion of re-use and its viability. For instance, within the retail and construction sectors, there are some re-use strategies in place, while for the manufacturing sector and waste services sector, re-use is considered to have no economic benefit. This is because the manufacturing sector considers space, infrastructure and logistics as significant barriers to re-use, and considers remanufacturing, reprocessing and recycling (technological solutions or the 'science first' model) as economically viable and environmentally friendly options. The waste service sector considers re-use as a risk because of the threat it potentially poses to their core recycling and recovery business model. However, retailers and the construction sector provide different perceptions about re-use and engage in a variety of innovative solutions, which seem to present re-use as a sustainable and profitable alternative to recycling and the use of landfill.

Some things – such as furniture and electrical goods – are conducive to re-use, and it is within these types of organisation that systematic evidence of re-use partnerships. For others the restrictions imposed on re-use and the nature of the product makes re-use far more difficult.

For instance, we have seen the ways in which some sectors identify the benefits of engaging in re-use behaviour but struggle in reconciling this with the opposing motivation of achieving profit, as seen in the case of the retail sector dealing with textile re-use. While re-use of unsold stock and swapping schemes facilitated re-use behaviour and reduced waste, they were working on a design that delivers the ultimate goal of increasing the longevity of the material at the design level. In areas where re-use partnership works, it depends on accessibility, reputation, economic benefit and credibility, which enhances the relationship and leads to greater alignment of fundamental goals.

The study therefore indicates that, at the moment, it would be unviable to state ultimate solutions regarding the longevity of re-use at the organisational level with any certainty. However, the research reveals a range of solutions and challenges across the different sectors, and demonstrates how certain areas have made steps towards overcoming these challenges.

Nonetheless, uncertainties with regards to the perception about re-use show that it remains in its nascent stages of development, and it is far from becoming a norm. This is further confirmed by some of the interviewees (Appendix IV, Section 9.4.1) who indicated no regulatory measures on re-use[28] as a gap and suggested putting compliance and cost measures at the manufacturing level, imposing a recycling tax, increasing landfill tax, creating re-use incentives and penalising people for waste are various ways of facilitating re-use.

These suggestions reiterate the complexity mentioned in the literature around the understanding of re-use and engaging in re-use behaviour (Section 2.4). At the organisational level, depending on the type of materials and organisation-type, re-use behaviour is dependent on the social, cultural, and financial dimensions.

Nevertheless, the findings also indicate that there are ways in which organisations can collaborate to deliver re-use activities that can play a part in demystifying the seemingly irreconcilable dichotomy between decreasing waste production and increasing economic returns. These are presented graphically in the following chapter in the form of collaborative re-use models.

[28] Interviews were conducted before Single Use Carrier Bags Charges (England) Order 2015.

7. CHAPTER SEVEN: EVALUATING AND SYTHESISING FINDINGS

7.1 INTRODUCTION

The mixed-methods research approach was used to investigate and identify the perception of re-use among corporations in the vanguard of waste management in the UK, as well as in their re-use supply chains, and also to analyse the challenges that corporations face and the mechanisms they apply to implement re-use practice. The perceptions of re-use and uncertainties regarding its long-term benefits that were discovered demonstrate that, at this moment, re-use is in its nascent stages of development (Chapter 6). The findings also cast light on the challenges organisations face in practising re-use, which represents gaps in the waste and resource industry. Examples of re-use, particularly among retailers and construction organisations and their re-use supply chains (which formed part of this research), identified the type of materials that are identified as having social, economic and environmental benefits through re-use. These materials are bulky furniture, WEEE (waste electrical and electronic equipment), food and construction materials.

This chapter is organised as follows. This current opening section introduces and provides an outline of the chapter. Section 2 presents collaborative re-use models to demonstrate how re-use of these above-identified materials operates among organisations that formed part of the semi-structured interviews (Chapter 6). The formation of these models for the specific type of materials validates Grix's (2004) argument that the use of more than one method in a single investigation improves the quality of the research by gathering more reliable data, thereby creating a more detailed and holistic picture. In addition, it further corroborates Amaratunga *et al.*'s claim that 'combining qualitative and quantitative methods enables confirmation and corroborations; elaborates or develops analysis, provides richer details; and initiates new lines of thinking through attention to surprises or paradoxes' (2002, p.23).

The coherency and consistency of collaborative re-use models are maintained by, firstly, presenting schematic representations of these models and, secondly, by using the same terminologies in all the models, i.e., 'Options' that demonstrate ways of operating re-use activities, and 'Requirements' that present factors that are linked with each other for maintaining organisational partnerships to carry out these re-use activities. Finally, in the models, rather than referring to organisations through their codes, they are described in

terms of their operations (as retailers, construction organisations, national-level TSOs and local-level TSOs).

Section 3 presents the evaluation of these collaborative re-use models, which is conducted by revisiting five of the participants from the semi-structured interviews. The section elaborates on the discussions on collaborative re-use models with these participants and presents the reviewed models (see Appendix 9.6.3, Figure 9.7 to 9.10), which forms part of the contribution of this research. One of these reviewed models (for re-use of food materials) has formed part of a publication (Tavri, 2018c).

Section 4 links the research findings with the literature review, prior to the conclusion and recommendations, which are presented in the following chapter. Figure 7.1 below schematically represents the structure of this chapter.

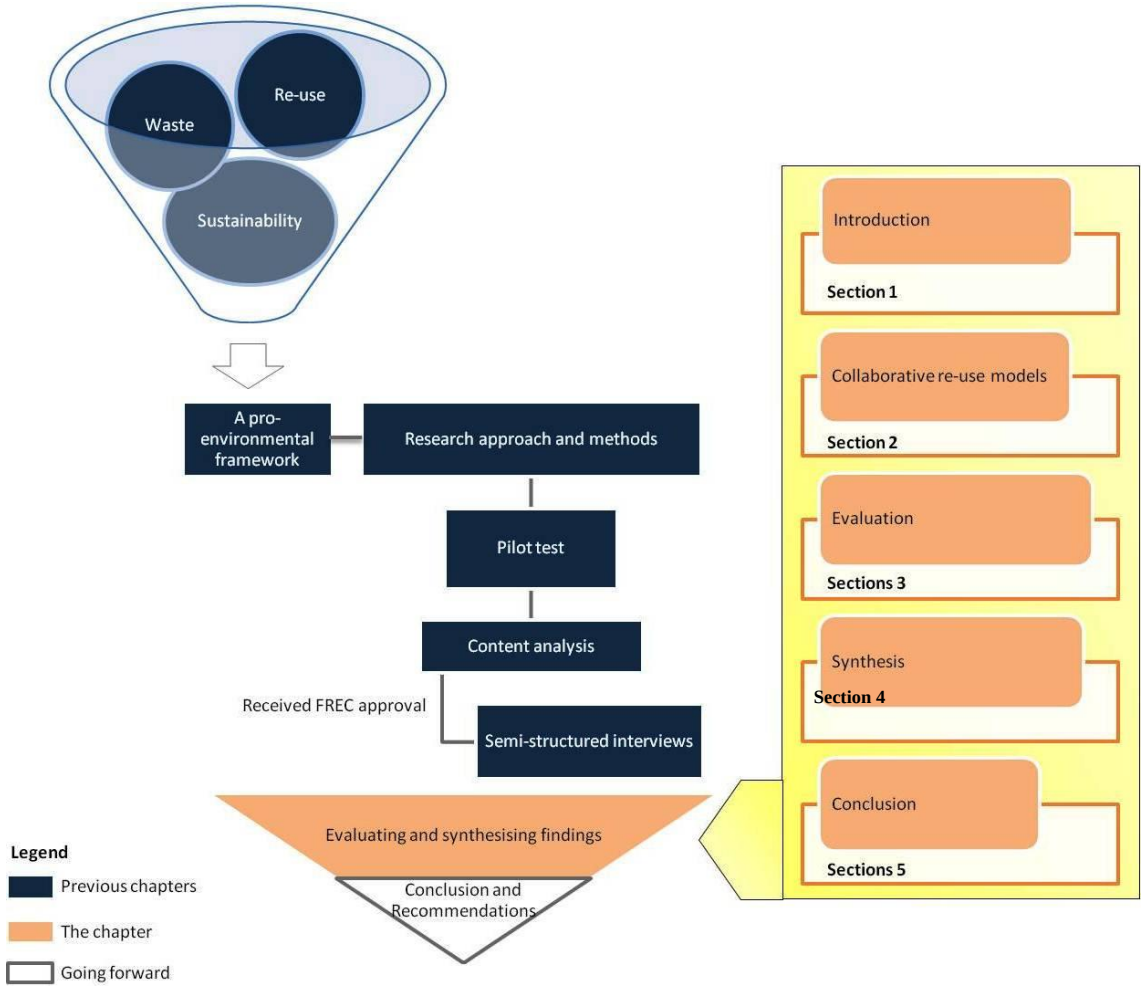


Figure 7.1: The Evaluating and Synthesising Findings chapter

7.2 COLLABORATIVE RE-USE MODELS

The collaborative re-use models presented in the following sections are for bulky furniture, food materials, WEEE and construction materials. The models demonstrate the

options and requirements for carrying out re-use activities that were indicated by organisations in the semi-structured interviews.

The decision to provide schematic representations of the models was influenced by Kollmuss and Agyeman's view that 'diagrams that serve as visual aids in clarifying and categorising' the factors behind pro-environmental behaviour are 'helpful' (2002, p.256). The following sections elaborate the models.

7.2.1 Collaborative Re-use Model for Bulky Furniture

The collaborative re-use model for bulky furniture (Figure 7.2) shows how retailers (R0 and R3) and their re-use supply chains, i.e., local-level TSOs (such as T6) and national-level TSOs (such as T11), carry out re-use activities. It also represents the factors that play an important role in maintaining retailers' (R0 and R3) partnerships with national-level TSOs (such as T11) and local-level TSOs (such as T6).

Although the model is based on the semi-structured interviews with R0, R3, T6 and T11, for the sake of maintaining coherency with other models (as indicated in Section 7.1) organisations are referred to by their organisational types, rather than codes.

The model shows that retailers (R0 and R3) carry out re-use of bulky furniture in two ways (Option 1 and Option 2). Option 1 demonstrates the process by which retailers (R0 and R3) donate unsold stock and/or second-hand furniture with the support of the national-level TSOs (such as T11, which specialises in bulky furniture) to various local-level TSOs (registered with national-level TSOs) in the area. In this form, national-level TSOs and local-level TSOs are dependent on each other. Option 2 shows the process by which retailers (R0 and R3) donate unsold stock or second-hand furniture directly to various local-level TSOs (such as R6) in the area.

In both Option 1 and Option 2, the intention behind re-use is to gain social, environmental and economic benefits, with donated re-usable furniture enabling local-level TSOs (such as T6) to sell the items at a lower cost to the community, thus helping those in need. For retailers (R0 and R3), it adds to their corporate social responsibility (CSR). Furthermore, re-use through donation prevents the items going into recycling, recovery or disposal, thus leading to cost and environmental benefits.

Nevertheless, what appears to be a simple process requires potentially complex partnerships to be maintained for re-use to be sustained – in this case, donating re-usable bulky furniture.

In maintaining the partnership of retailers (R0 and R3) with national-level TSOs (such as T11), space, logistics, localism, economic benefit, corporate thinking, reputation, and credibility are key factors. Along similar lines, maintaining a partnership of retailers (R0 and R3) with local-level TSOs (both those registered and not registered with national-level TSOs), space, credibility, localism, and economic benefit are identified as important factors (as shown in 'Requirements' in Figure 7.2).

The model further indicates that all the factors above are important, as the lack of any single factor can pose a barrier to maintaining re-use behaviour. For instance, in the semi-structured interviews (Section 6.2.4), R0 indicated that some of the items that they receive from the customers through the 'take-back' scheme could not be donated to TSOs because the items do not have labels, and thus lack credibility (sofas were cited as an example of this kind). R0 explained this point by indicating that

> the real problem that we found in re-use is, for instance, if we talk about a sofa: the sofa comes back from the customers when they bought a new one from us, and T11 pick it up from us. They cannot sell it at all unless it has labels on it, which shows its makeup requirement. [This constitutes the product label, which provides details of the materials, manufacturer and composition of the product.]

In contrast, the examples below indicate how certain factors enable the maintaining of partnerships and re-use behaviour. For instance, T6 mentioned in the semi-structured interviews (Section 6.2.4) that one of their retail partners, R0, is saving money through re-use, as T6 are local to the area and have the space and logistics for managing the re-use of bulky furniture. This economic benefit to R0 is one of the reasons behind the ongoing partnership. T6 explained their working framework by saying that:

> Our model works by providing the profitability to the businesses involved, which includes essentially how much value is in the waste, what is the cost of getting it somewhere [where] the higher value [can be reclaimed], and how high is that value when it arrives at that place.

Along similar lines, T11 described achieving CSR and economic benefits as the key factors for ensuring that their partnership with R3 and R0 was sustainable. T11 said in the semi-structured interview:

> our achievements have to lead to long-term partnerships with the business sector; R3 and R0 being successful examples. R3 are the founders of the take-back scheme. Collaboration with T11 helped corporate to handle the re-use materials, and they started seeing it as an environmental benefit and providing support to the community through

> re-use. R3 is pushing the social agenda to make sustainability a normative behaviour within their organisations. R0 is at the initial stage, and we are collaborating with many other corporations to make re-use a norm for social profit. (Section 6.2.3)

Furthermore, R3 indicated in the semi-structured interview that the T11 has high potential to be a long-term collaborative partner because it has the requisite space, logistics and connections with local-level TSOs (Section 6.2.3). In addition, R3 said that, because of their credibility and reputation, T11 is a natural choice re-use partner.

The above pieces of evidence indicate that re-use of bulky furniture is acceptable to the business model, in both financial and social terms. concluding that it can be considered to balance out the seemingly irreconcilable dichotomy between economic benefit and bulky furniture waste reduction. Nevertheless, re-use of bulky furniture cannot be claimed to be a norm because of the existing gaps, such as with items' credibility (as indicated by R0). This reaffirms the complexity mentioned in the literature pertaining to the understanding of what constitutes re-use and how to engage in re-use behaviour (Section 2.4), and also underscores that re-use in its nascent stages of development.

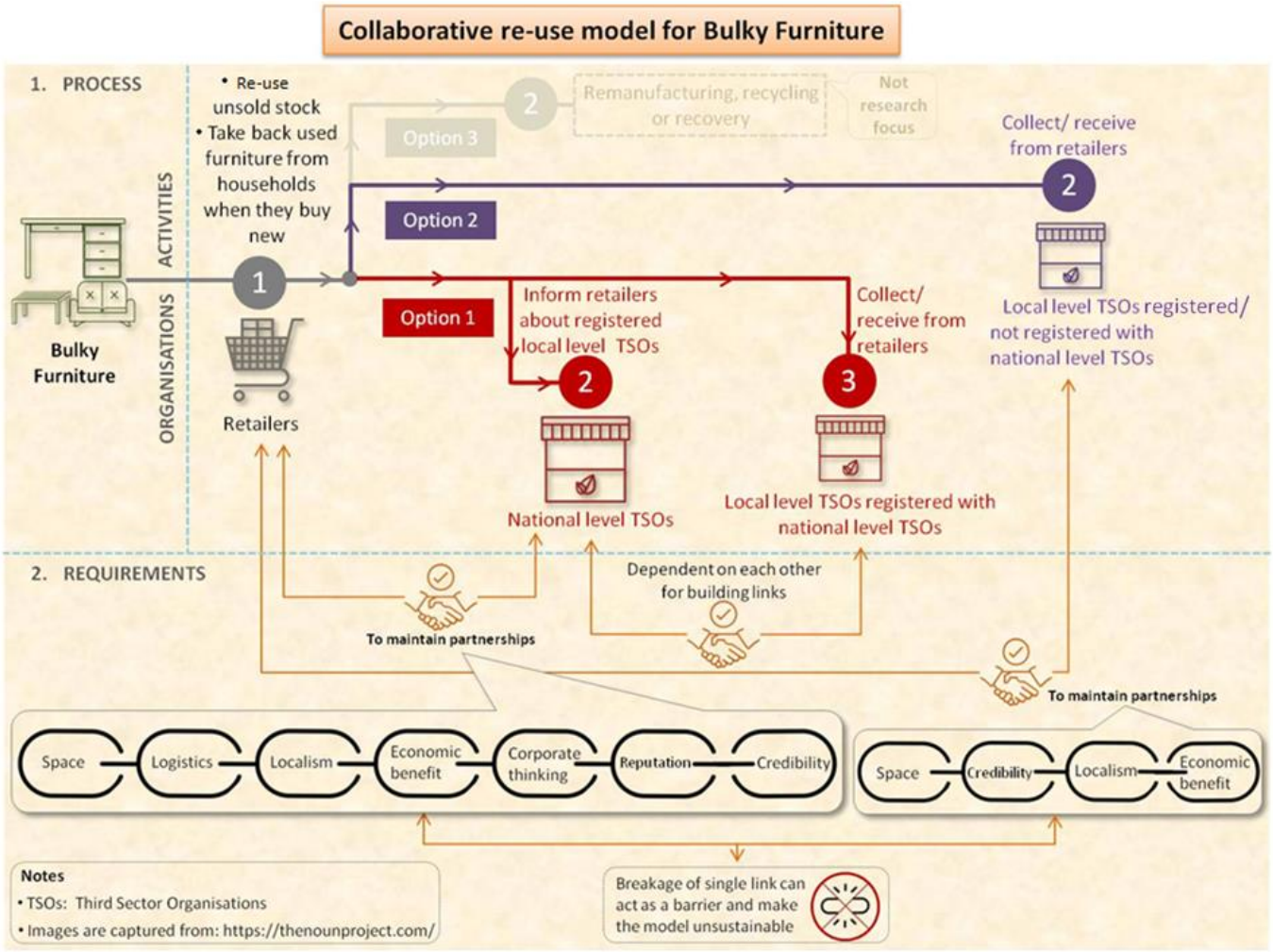


Figure 7.2: Collaborative re-use model for bulky furniture

7.2.2 Collaborative Re-use Model for Food Materials

The collaborative re-use model for food materials (Figure 7.3) was developed based on the semi-structured interview with R1, a food retailer. Even though R0 and R4 (the mixed retailers) also have food materials as part of their business activities, during the semi-structured interviews (Chapter 6) they talked about re-use of bulky furniture and textiles respectively. The focus of R0 and R4 on particular types of re-use materials justifies the choice of open-ended interview as a data collection method, as they were thus able to reveal the normative activity within their organisations (Section 4.4.4.1).

Although the model is based on the semi-structured interview with R1, in order to maintain coherency with other models (as indicated in Section 7.1), R1 is referred to as 'retailers'.

Similar to the previous model (Section 7.2.1), Option 1 and Option 2 of this model also demonstrate the process of re-use. Here, Option 1 shows retailers (R1) that are in direct partnerships with national-level TSOs (such as T4), which collect and redistribute unsold/surplus food materials to local-level TSOs (registered with national-level TSOs). This demonstrates the interdependency of national-level TSOs (such as T4) with local-level TSOs (registered with national-level TSOs). Option 2 shows retailers' (R1) direct partnership with local-level TSOs (both those registered and not registered with national-level TSOs). In both the options, unsold or surplus food stock is distributed by the local-level TSOs to those in need. For retailers (R1), it adds to their CSR; furthermore, redistribution of surplus food avoids the food going to recycling, recovery or disposal, and thus leads to cost and environmental benefits. This is evident in the WRAP (2018k) report, which shows that in the UK between 2015 and 2017, the redistribution of surplus food from the retail sector doubled (the equivalent of an additional 15 million meals given to people in need). R1 is among the retailers that formed part of this contribution.

The model shows that, for maintaining a partnership of retailers (R1) with national-level TSOs (such as T4), space, logistics, economic benefits, corporate thinking, reputation and credibility are key factors. Along similar lines, for maintaining a partnership of retailers (R1) with local-level TSOs (registered or not registered with national-level TSOs), space, credibility, localism and corporate thinking are identified as important factors (see 'Requirements' in Figure 7.3).

Furthermore, similar to the previous model (Section 7.2.1), this model also demonstrates that all the factors above are important, as the lack of any single factor can act as a barrier

to maintaining re-use behaviour. For instance, in the semi-structured interview, lack of economic benefit was identified when R1 was asked about the longevity of re-use and their partnership with T4 (Section 6.2.4). R1 said:

> in terms of forecast, the partnership with T4 is in a bit of a dilemma. Since through our supply chain, we have been trying to reduce the amount of surplus, which will reduce the amount of food going to TSOs. On the one hand, we will have an economic benefit, but it will lead to a reduction in social benefit.

The dilemma above represents the complexity of managing re-use of food materials. This uncertainty arose despite the fact that R1 started their partnership with T4 by recognising their credibility, reputation, space and logistics. R1 said in the semi-structured interview, 'T4 have good infrastructure and logistics. They understand our model since they are national, but local organisations might not necessarily understand our operations and system' (Section 6.2.3).

Alongside the above, R1 also indicated the intention to benefit charities, thus adding to their CSR as another reason for initiating a partnership with T4. R1 said in the semi-structured interview (Section 6.2.1):

> re-use at our organisations started when T4 the TSO approached us in 2011. Because what we used to do was to return the unsold food stock or surplus to the manufacturers. So T4 asked for our support, and we were fine with that since the T4 distributes the unsold food stock to charities.

The above evidence and the uncertainty with regards to the re-use of unsold or surplus food materials indicate that the goal for achieving profitability or economic benefits supersedes the social good, which in this case is carried out through the donation of surplus food materials.

In addition to gaining economic benefits, in the semi-structured interviews R1 also emphasised the lack of regulation around re-use indicates that it is still in its nascent stages of development, which they consider as another reason for their existing dilemma (Section 6.2.2). R1 said:

> re-use is quite tricky at the moment, which is about the circular economy at the moment, which is a kind of high-level strategy rather than more practical. We define the unsold food products as waste – other people may define it as re-use, but we consider it as waste if there is government legislation to promote re-use. Whether it will work or not will depend on how it is framed.

The above indicates a contradictory situation. On the one hand, R1 initially claimed to consider surplus food as re-use (Section 6.2.1), but on the other, they claimed unsold or surplus food to be waste and not re-use (Section 6.2.2). This reaffirms the following research findings. Firstly, economic profitability is one of the major driving forces for corporations to carry out (or not carry out) re-use activities. Secondly, unclear and differing perceptions of re-use reiterate the complexity mentioned in the literature around the understanding of what constitutes re-use and how to engage in re-use behaviour (Section 2.4).

This demonstrates that, while in the short-term re-use of food materials is considered to be able to resolve the seemingly irreconcilable contradiction between economic benefit and food waste reduction, the prevailing uncertainties indicate that its longevity has yet to be explored. This would be a valuable focus for further study. Nonetheless, as part of this research, the model is used for further validation (see Section 7.3).

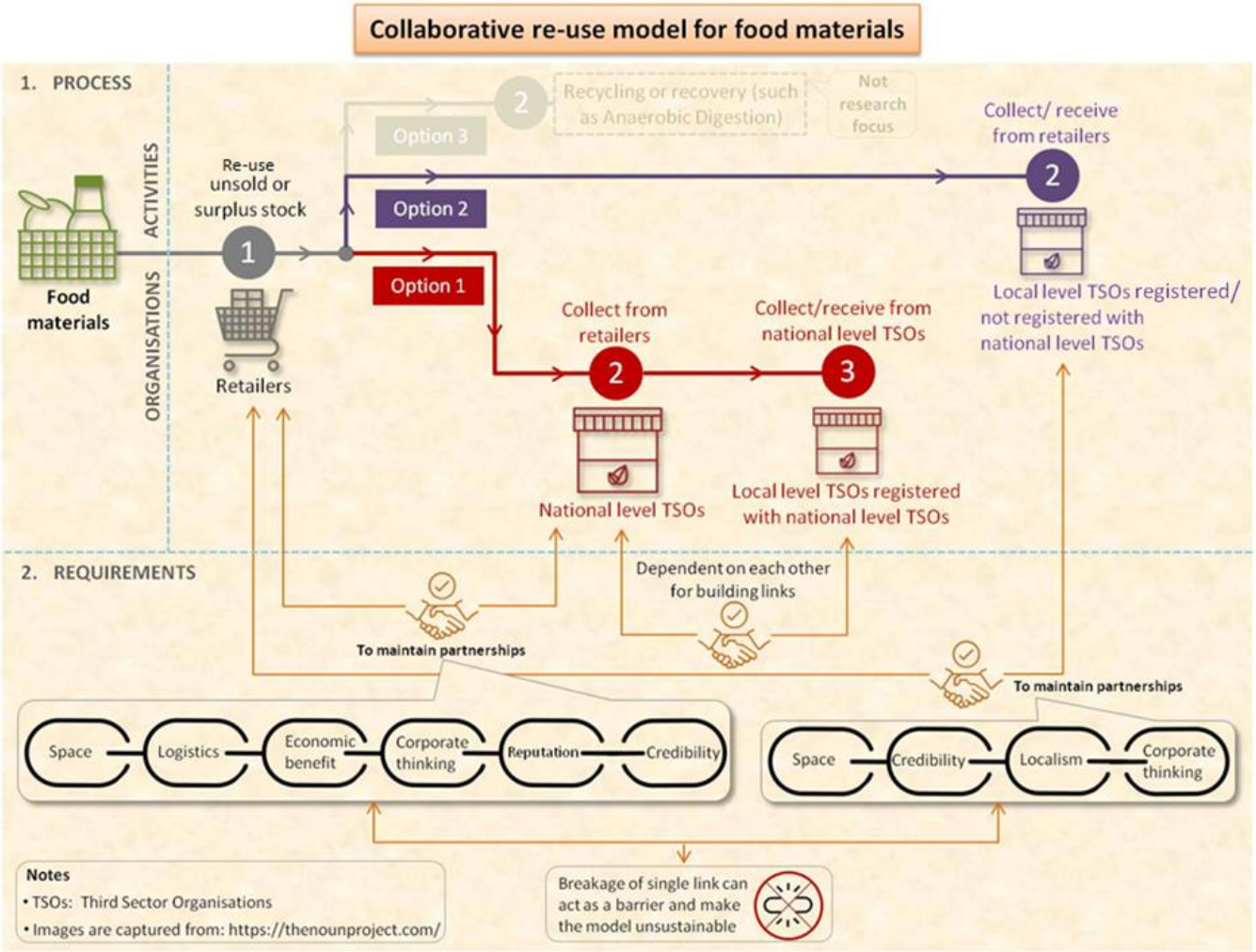


Figure 7.3: Collaborative re-use model for food materials (Tavri, 2018c)

7.2.3 Collaborative Re-use Model for WEEE

The collaborative re-use model for WEEE (Figure 7.4) shows how retailers (R2) and their re-use supply chains (i.e., local-level TSOs (such as T9)) and national-level TSOs (such as T7) carry out re-use activities. It also represents the factors that play an important role in maintaining retailers' (R2) partnerships with national-level TSOs (such as T7) and local-level TSOs (such as T9).

Although the model is based on the semi-structured interviews with R2, T7 and T9, for the sake of maintaining coherency with other models (as indicated in Section 7.1), organisations are referred to by their types rather than their codes.

The model shows that retailers (R2) carry out the re-use of WEEE in two ways (Option 1 and Option 2). Option 1 demonstrates the process by which retailers (R2) donate unsold stock or second-hand WEEE, with support from national-level TSOs (such as T7), to various local-level TSOs (registered with national-level TSOs). In this way, national-level TSOs and local-level TSOs (registered with national-level TSOs) are dependent on each other. Option 2 shows the process by which retailers (R2) donate unsold stock or second-hand WEEE directly to various local-level TSOs not registered with national-level TSOs (such as T9) in the area.

What appears to be a simple process requires complex partnerships to be maintained to sustain re-use, in this case, donating re-usable WEEE. Therefore, space, logistics, localism, economic benefit, corporate thinking, reputation and credibility are key factors for maintaining a partnership between retailers (R2) and national-level TSOs (such as T7).

Similar to the previous models (Section 7.2.1 and Section 7.2.2), this model also demonstrates the importance of association among the factors above, whereby a lack of a single factor can act as a barrier to maintaining the partnership and re-use behaviour.

Such a barrier is evident in the semi-structured interviews (Chapter 6) through the following examples. T9 indicated that R2 view them as lacking credibility and reputation (Section 6.2.4). T9 said:

> we enjoyed a good relationship with R2 but as the volumes of equipment increased [R2's] IT security manager became involved and decided that all hard drives had to be removed from machines being donated to us, which really reduces their value to us. They also have started using a large IT 'cradle to grave' company for the supply,

> management and disposal of IT equipment, so that their donations to us have decreased significantly over the past 12 months.

What seems to be a lack of reputation and credibility to T9 is a streamlining of the waste management system for R2. Therefore, they are forming a partnership with an organisation that has similar corporate thinking. R2 elaborated on this by indicating that 'the TSOs need to match what they do with what the businesses need' to achieve both 'financial saving' and 'social value' (Section 6.2.4). R2 further emphasised that they partner with the TSO, which has clear re-use objectives within their policy (Section 6.2.3).

The semi-structured interview (Section 6.2.3) indicated that R2's partnership with T9 (a local-level TSO not registered with national-level TSO) appears to result in equilibrium, gaining no profit and incurring no loss. This is despite T9 claiming to fulfil the requirements mentioned above of R2.

Firstly, with regards to corporate thinking, T9 said that 'although we are charities or social enterprises, we expect to be treated with the usual commercial regard and terms – because we do not hide behind the charitable status' (Section 6.2.5). Secondly, with regards to re-use embedded within their policy, T9 stated:

> on behalf of society in general, we belong to the largest business networking organisation in the world (BNI) and are constantly evangelising the need and effectiveness of re-use – and more specifically the benefits to the disadvantaged in getting their lives back on track in participating in our work. People who could never afford big brands can purchase low-cost technology and also provide benefits to the environment. We firmly believe that re-use is embedded within the society's ethos and generally issues from mid- and higher-management levels, which then is incorporated into normal practice. (Section 6.2.3)

The above contradictory claims of R2 and T9 indicate that retailers (R2) prefer partnering with a large-scale organisation, as they perceive all of them as having similar corporate thinking, reputation and credibility. This is evident through their ongoing partnership with T7 (a national-level TSO).

T7 said that 'our partnership with R2 is optimum; we provide a service for which they pay. Yes, it is hopefully a long-term partnership' (Section 6.2.4). This is further evident by R2, which stated:

> our partnership with T7 is long-term, and re-use will be an ongoing activity since it is usually cheaper than recycling. We are now also doing more with our parent company,

> on the delivery of the programme. The charity is involved in each of the goals. What stores are left with may be re-usable through waste donation. (Section 6.2.4)

Furthermore, R2 said that ‘re-use is considered long-term as it is usually cheaper than recycling’ (Section 6.2.3).

The above pieces of evidence indicate that re-use of WEEE is profitable, but only through Option 1. This would lead to the conclusion that re-use of WEEE can be considered to resolve the apparently irreconcilable contradiction between economic benefit and WEEE waste reduction. Nevertheless, various approaches and shifts in partnership for carrying out re-use reiterate the complexity mentioned in the literature around the understanding of what constitutes re-use and how to engage in re-use behaviour (Section 2.4).

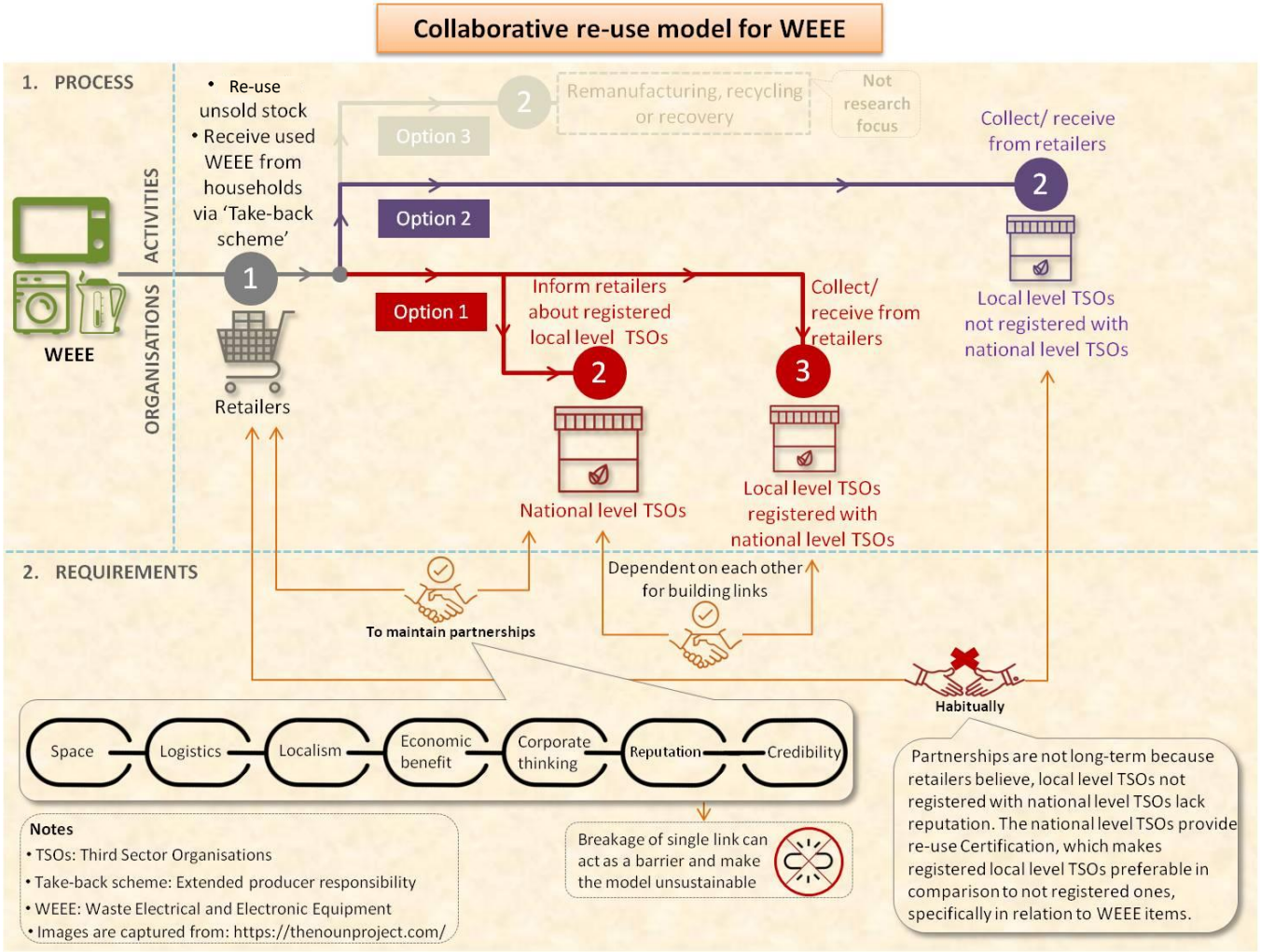


Figure 7.4: Collaborative re-use model for WEEE

7.2.4 Collaborative Re-use Model for Construction Materials

The collaborative re-use model for construction materials (Figure 7.5) shows how construction organisations (C1 and C5) and their re-use supply chains (i.e., local-level TSOs such as T5 and T8) carry out re-use activities. It also represents the factors that play an important role in maintaining their partnerships.

Although the model is based on the semi-structured interviews with C1, C5, T5 and T8, for the sake of maintaining coherency with other models (as indicated in Section 7.1) organisations are referred to by their types, rather than by their codes.

The model shows that construction organisations (C1 and C5) carry out re-use of construction materials in three ways (Option 1, Option 2 and Option 3). Option 1 demonstrates the process by which contractors on the same project use re-usable construction materials. Option 2 is the process whereby, at the end of the project, leftover construction materials are re-used elsewhere: re-usable construction materials are either taken away by other construction sites (clients) or are stored in their own/contractors' storage facilities. This, in particular, is carried out by C5 through their swap shop. C5 said:

> it is an online portal where each site provides information on the materials left at the site. Those sites that need any of the materials will get the notification and can go and pick it up. It is all over the UK, and each site pays themselves for the logistics. The remaining materials go to our warehouse for future re-use. This is a mechanism of re-use we carry out at the end of each project. (Section 6.2.3)

Finally, Option 3 refers to the process by which construction organisations (C1 and C5) donate re-usable materials to their local-level TSO partners, both those registered and not registered with big TSOs (such as T5 and T8), for re-use, reclaim or refurbishment purposes.

In all the options (Option 1, Option 2, and Option 3), the intention behind re-use is to gain social, environmental and economic benefits by preventing the re-usable materials from going to recycling, recovery and landfill. This diversion is evident in the semi-structured interviews, where C5 said that 'in one of our recent projects we managed to divert 10.8 tonnes of waste from landfill to re-use' (Section 6.2.3). Furthermore, C1 said that the intention to re-use 'drive[s] the projects team to find ways that they can save money, improve their waste performance and benefit the local community at the same time' (Section 6.2.1). Along similar lines, C5 said 're-use to us is not only about environmental

savings, but not disposing of materials for recycling and landfill also provides substantial cost savings' (Section 6.2.2).

Space, logistics, localism, credibility, economic benefit, and corporate thinking are required for maintaining partnerships among construction organisations (C1 and C5) and local-level TSOs (such as T5 and T8) for the sake of facilitating re-use. Lack of any single factor can act as a barrier to maintaining re-use behaviour. For instance, C1 said in the semi-structured interviews (Section 6.2.4) that lack of space, logistics and localism presents a challenge to carrying out re-use practices regularly. C1 said

> time and infrastructure are major constraints. For some projects, we have to make decisions very quickly, and in that type of project, we could only think of re-use if we have time to stack things up in a proper manner and if someone wants to take it.

Emphasising the gap mentioned above, C1 made two suggestions for facilitating re-use in the construction sector: having a centralised system, or a credible organisation with corporate thinking (such as national-level TSOs mentioned in the previous models for bulky furniture, food materials, and WEEE). C1 said:

> we need…a middle organisation…to research [the] re-use market so the gap between the construction and charity can be filled. So there need to be ways to maximise that, either through government funding or by corporate. (Section 6.2.3)

Despite the gap mentioned above, C1 indicated that their 'relationship with T8, although it is not structured, it is long-term' (Section 6.2.4). However, C5 said that:

> with T5 we are connected in the re-use and recycling of wood coming out from the construction site, which leads to social benefits. However, the partnership with them is not long-term since our priority is designing out waste. (Section 6.2.4)

The above pieces of evidence yet again demonstrate economic profitability as one of the significant motives for construction organisations (C1 and C5) to facilitate re-use practice. However, because of the lack of any of the required factors, they do not always consider re-use via TSOs partnerships (such as T5 and T8) and are developing other economical ways of managing waste. This shows that achieving profitability supersedes the social good as a motivation for behaviour change, which in this case is carried out through the donation of re-usable construction materials to local-level TSOs. This reaffirms the research findings that economic profitability is one of the major driving forces for corporations to carry out (or not carry out) re-use activities.

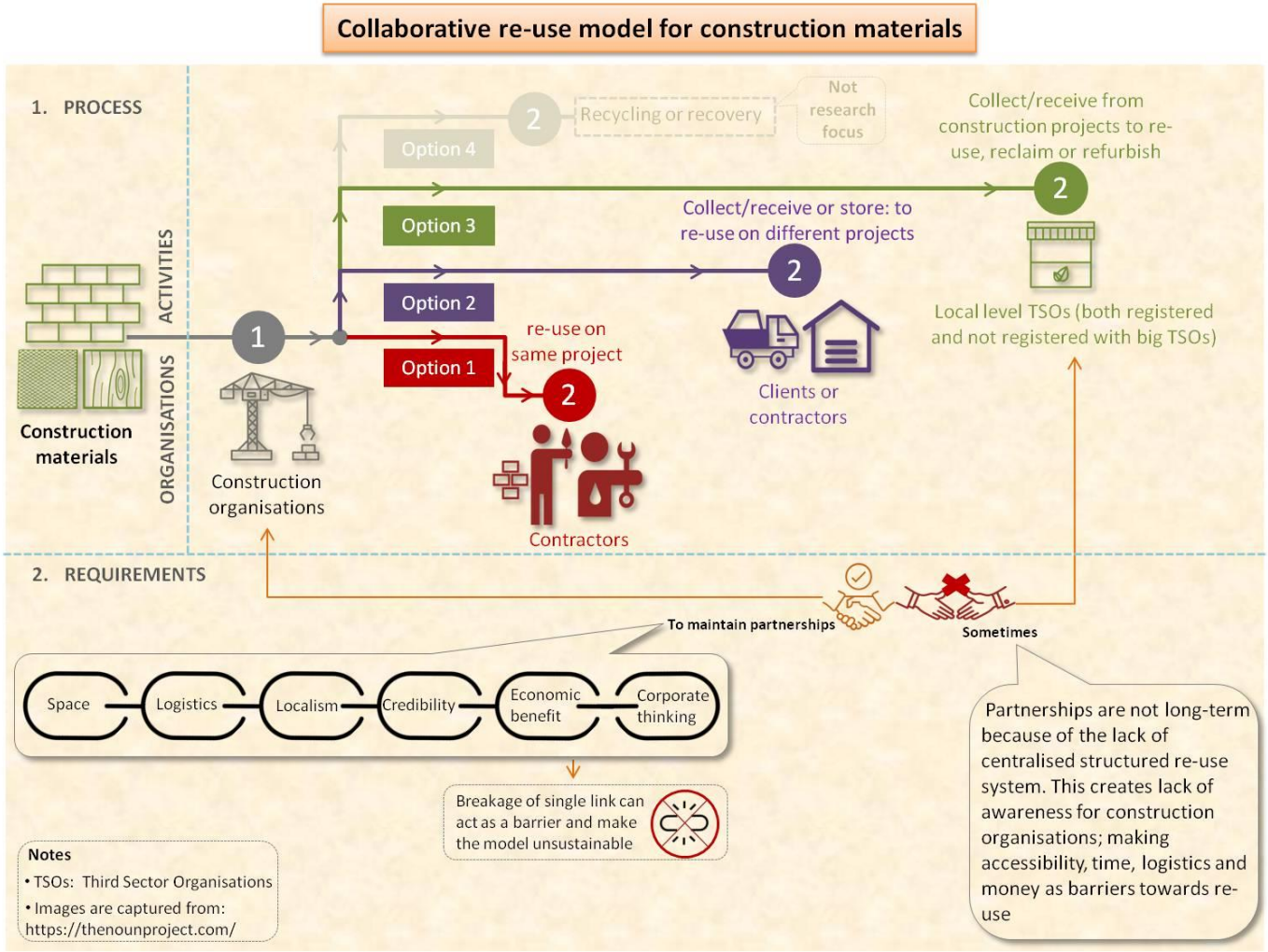


Figure 7.5: Collaborative re-use model for construction material

7.2.5 Discussion

While the schematic representations of the models provided above might be taken to suggest clarity and coherence of the relationships and processes in question, it is important to reiterate that the situation is complex, and even contradictory. Behind this seeming coherency, the analysis above reiterates that re-use activities depend on the type of material in question, and the type of organisation. The reasons for adopting re-use behaviour vary, but often feature the pragmatic alignment of corporations' desire for economic benefits and TSOs' desire for social benefits.

Re-use behaviour at the organisational level is therefore dependent on the social, cultural and financial dimensions. Also, the uncertainties around the longevity of re-use behaviour further emphasise the complexity posed by the fact that, in reality, humans are not entirely rational agents, and thus do not make systematic use of the information provided. This is mentioned by Kollmuss and Agyeman (2002, p.256), who argue that 'pro-environmental consciousness' is 'embedded in broader personal values and shaped by personality traits and other internal as well as external factors'.

Despite this complexity, the re-use partnerships in the models identify a potentially novel market dynamic. In the business or corporate market, smaller organisations/businesses are increasingly crowded out or taken over by large corporations, with their share in the market growing ever smaller (Monbiot, 2000). In contrast, this research finds that in the re-use TSOs market, national-level TSOs require partnerships and must build links with local-level TSOs, charities, communities or social enterprises to make re-use the first 'call' for corporations. Essentially, collaboration across different levels and sectors is the key factor for making re-use work, and the dynamic force in these collaborative partnerships is often the TSOs.

The next stage of the research was to validate the findings by revisiting interviewees to obtain their perception of the accuracy and potential value of the models formulated. This is elaborated on next.

7.3 EVALUATION

The collaborative re-use models do not involve manufacturers and waste service organisations. The findings from the semi-structured interviews indicate that re-use is currently not profitable to these sectors as their core business and current focus lies in

technological solutions. Thus, only retailers, construction companies and TSOs were revisited, to focus on their processes and methods of re-use.

Robson (2000) indicates that the involvement of stakeholders in the evaluation process can be considered a very positive step. Persuading participants to be involved in the evaluation was a skill that I developed through discussions with supervisors, which aided in planning the revisits.

As indicated earlier, the purpose of revisiting participants was to receive validation from stakeholders regarding the applicability of the collaborative re-use models in real-life situations. Thus, the evaluation process involved revisiting 15 organisations that had taken part in the semi-structured interviews.

The invitation for organisations to re-engage in the process stated:

> It has been almost two years since I interviewed you as part of my PhD research on organisational behaviour towards re-use. Currently, I am in the final stage and have developed collaborative re-use models for the different type of re-use materials. To receive further validation as part of my research, I would like to share and discuss the collaborative re-use models with you and receive your valuable feedback. Your participation will not only add value to the PhD research but will also aid in providing recommendations to the stakeholders regarding the development of re-use strategies.

Along with the above, a one-page research summary (see Appendix VI, Section 9.6.1) was shared with the organisations to provide them with an overview.

Of the 15 experts that were contacted, three no longer work for their original organisations, one had been relocated, one regional-level TSO had gone into administration, and five did not respond. The remaining five all agreed to participate in the evaluation process. These were: R1, a retailer with expertise in food materials; R3, a retailer with expertise in bulky furniture; C1, a construction organisation with expertise in construction materials; T9, a TSO with expertise in WEEE; and T6, a TSO with expertise in construction materials.

Those who agreed to participate represented a wide-ranging and comprehensive selection of participants. According to Bauer and Gaskell (2000), this adds credibility to a qualitative study since the selection arises not through counting organisations but by exploring a suitably wide range of organisations. The overall process of preparation, planning, and execution was carried out over three months from April 2017 to June 2017.

Concerning ethical issues and consent, participants were given an overview of how the discussion would proceed, and asked to provide suitable times for a meeting and their consent to proceed. Organisations are identified with codes to respect participants' anonymity.

Appointments were scheduled, providing 30 to 45 minutes with all five experts, based on their availability. Furthermore, to respect participants' resource and time constraints, the discussions were carried out in mixed-mode, that is, either face-to-face or via telephone, according to which was most convenient (Irvine, 2011; Meho, 2006).

The face-to-face discussions were always held in a location that was convenient for the participant, and where disturbances were minimised. This was usually the participant's workplace. I dressed in smart casual clothes suitable for the office environment.

Table 7.1 below provides details on the participants, including organisation-type, code, participants' designation, the medium of discussion, and the relevant respective collaborative re-use models that were shared and discussed with each organisation. As a follow-up, a thank you note and summary of the discussions was sent to the participants.

Table 7.1: Evaluation participants

Type of organisations	**Codes**	**Participant's designation**	**Medium of discussion**	**Collaborative re-use models discussed**
TSO	T8	CEO	Telephone	Construction materials
TSO	T9	Business manager	Face-to-face	WEEE
Retailer	R3	Store sustainability lead	Face-to-face	Bulky furniture
Retailer	R1	Senior director: sustainable business	Telephone	Food materials
Construction	C1	Head of sustainability	Telephone	Construction materials

This evaluation process, as indicated above, was carried out to receive experts' validation of the models, and the discussions were structure in an open-ended manner to allow participants to talk freely and in their own words. Prior to each discussion, participants were reminded that the focus of the study was 're-use' by reiterating the research summary (see Appendix VI, Section 9.6.1). Transcripts of the discussion are outlined in Appendix VI, Section 9.6.2.

All five participants immediately provided an overwhelmingly positive response to the models: T8 said it was 'brilliant and interesting', R1 said it was 'good', T9 said it was 'inspiring', and R3 said it was 'well laid out and useful'.

Such feedback demonstrates the potential for the models as a means of initiating real and positive changes in this area, whereby the models can represent a means of guidance that facilitates re-use as an activity that can be considered as one of the factors contributing

towards reducing consumption and waste production while maintaining profitability. Nonetheless, both corporations and TSOs recommended integration of some of the essential requirements on the models to update them and enhance their usefulness.

T9 is a local-level TSO that is not registered with national-level or regional-level TSOs specialising in re-use. It specialises in WEEE repair and re-use. Their feedback regarding the collaborative re-use model for WEEE (Figure 9.10) was that

> the model is effective and suggestive, as it provides a way by which we can deal directly with retailers and maintain long-term partnerships, that is: by registering with those national-level TSOs that have an existing partnership with retailers.

T9 further illustrated that in their current nascent situation, they are focussing on improving their internal systems and procedures. Furthermore, to avoid the economic risk to their charity-based re-use model, they are in the process of transitioning their reputation from a charity organisation to that of a social enterprise. In doing so, they are making investments into improving their operating system and procedures, such as their website and data-wiping process, as well as their certifications and other credentials. Nonetheless, based on their previous partnership with a retailer, during the discussion they agreed with the requirements laid down in the model and further emphasised the importance of 'credibility and reputation as key to maintaining long-term partnerships, followed by space, logistics, corporate thinking, and economic benefits'. Furthermore, they indicated that web-based platforms such as eBay provide a means of enhancing re-use of WEEE, which was also identified in this study's literature review (Section 2.4.1.2).

Along similar lines, T8 (a local-level TSO specialising in the re-use of construction materials) indicated that 'web-based media is a great source of materials and also provides a reference of various means of re-use or up-cycling'. However, they highlighted their current concerns that:

> local-level TSOs are often too small and poorly resourced to undertake enormous social action tasks. TSOs may be in premises that are under-resourced and might be looking for ways to improve their environment when they take up construction materials. TSOs may have access to large numbers of service users or volunteers, but lack in expertise. Transportation is a high cost and complex to organise for the TSO. Like most organisations and sectors, storage is a big issue.

The above feedback validates the essential requirements indicated in the models. Furthermore, the TSOs' concerns are in line with those analysed in the literature review,

such as lack of funding and lack of expertise and space, as well as constraints regarding logistical issues and other operational activities (Section 2.4.1).

This reveals the existing limitations of the models concerning local-level TSOs, while also implying potential solutions to fill this gap in the relationship between local-level TSOs and corporations. The models demonstrate a symbiotic and mutually beneficial relationship between corporations and national-level TSOs, and between national-level and local-level TSOs. Thus, collaboration of corporations and TSOs can be one of the solutions to overcome existing barriers, which is also suggested by T8.

T8 indicated that 'there could also be more focused development upon how corporates could work with key players in the TSOs to find ways to match need to supply'. This is indeed demonstrated in the models through various 'Options'.

Corporations also offered their suggestions on the models to update them and enhance their usefulness. R3, the retailer specialising in bulky furniture, demonstrated genuine engagement with the ideas posed by the collaborative re-use model for bulky furniture (Figure 9.7). They associated their company's waste management strategies with the 'Requirements' mentioned in the model.

As part of this dialogue, the participant highlighted the necessity of available 'space' and 'logistics', which they described as 'capacity', and emphasised as being an essential requirement for enabling re-use activities. Additionally, the participant associated 'localism' with strategic underpinning: essentially, they emphasised that the viability of localism depends on the size of their retail store/shop. This is elaborated below in the 'Options' discussion.

Also, they stressed the importance of combining 'economic benefits' with commercial sense, where possible, as well as providing services to customers. Moreover, 'corporate thinking' is mainly considered an essential requirement because it aligns with their CSR policy.

Finally, 'reputation' and 'credibility' are also indicated as key in assessing risk assurance, compliance, and pre-assessments. Furthermore, they suggested adding 'reliability' as another essential requirement to overcome the complexity of maintaining partnerships with national-level TSOs. Similarly, they recommended the addition of 'corporate thinking' as another requirement for the formation and maintenance of partnerships with local-level TSOs.

With regards to the 'Options' in the collaborative re-use model for bulky furniture (Figure 9.7), R3 indicated (as mentioned above) that the priority varies depending on the size or scale of retail store/shop. Essentially, in their larger retail shops, they prioritise Option 3 (recycling and recovery), while in their smaller retail shops, they prioritise Option 1 (re-use, via national-level TSOs). Furthermore, Option 2 (re-use via local-level TSOs) is only applicable in scenarios when Option 1 is not a viable alternative.

One of the uncertainties that R3 identified in the model is within the layout of the 'Requirements'. According to the participant, unless explained, the linear demonstration of 'Requirements' suggests that the links are in a hierarchy (from left to right). Highlighting the similar ambiguity, C1 suggested that in the collaborative re-use model for construction materials, the 'Requirements' be represented in a format that indicates uniformity. Nonetheless, both R3 and C1 emphasised that they are in the process of upgrading their waste management strategies in line with the circular economy principles. They also both indicated that the collaborative re-use models for bulky furniture and construction materials respectively would add value to the process, and expressed a desire to share it after the suggested amendments were made.

C1 made the following suggestions regarding the collaborative re-use model for construction materials (Figure 9.8). Firstly, in the 'Options', the participant recommended adding remanufacturing (whereby suppliers take-back materials) as Option 4, thereby shifting recycling and recovery to Option 5. They indicated that such changes in the model would demonstrate a closed-loop supply chain (CLSC), thereby supporting the principles of the circular economy.

Additionally, with regards to 'Requirements', C1 suggested the addition of 'contractual requirement' as another link. This is because the preferred waste management strategy varies according to the requirements of different clients. Also, there is some variability subject to the type of project (construction, demolition or fit-out). Furthermore, similar to R3, C1 also associated 'corporate thinking' with their CSR policy, indicating that social benefit is one of their key considerations. Moreover, the participant emphasised the fact that the provision of a centralised national-level TSO, specialising in construction re-use, would undoubtedly encourage re-use within the construction industry; this is because it would save time, money, and logistical demand, as indicated in the model.

R1 (the retailer specialising in food materials), stated that the collaborative re-use model for food materials (Figure 9.9) is 'good and informative'. This is because their waste management strategies generally revolve around this area. Furthermore, R1 suggested

that, as a food retailer, the Options vary between store level and depot level. Option 1 (re-use via a national-level TSO) is prioritised when unsold food stock is generated at depot level. However, at the store level, because most of the food is retained until its expiry date, it becomes non-consumable. Thus, at the store level, Option 3 (recycling, recovery, and anaerobic digestion) is prioritised. Nonetheless, as a means of updating their strategies in line with the circular economy principles, R1 is at the conceptual stage of adding one additional Option, namely using their warehouse as a storage facility, which would also provide an economic benefit. According to R1, this concept will involve redistribution to manufacturers before national-level TSOs, thereby prioritising remanufacturing and reverse logistics over re-use. This prioritisation marks a shift to a 'technological' solution over a 'human action' solution. The significant factor driving this shift is the concern regarding the quality of unsold food stock.

Although national-level TSOs have the necessary credibility to check the technical standards of food, from the participant's perspective, there is an advantage for them in keeping quality checks in-house, as this allows them to measure possible risks inherent in distributing food that is non-consumable. Therefore, R1 is in the conceptual stage of providing an in-house storage and redistribution system. Nonetheless, they indicated that as this is currently in the conceptual stage, it is impossible to assess whether it will provide long-term viability compared to the existing re-use distribution system.

The feedback above indicates vulnerability for national-level and local-level TSOs in terms of maintaining a mutually beneficial relationship with food retailers. It is therefore essential to emphasise the benefits national-level and local-level TSOs specialising in the re-use of unsold food materials stand to gain. These TSOs could begin implementing innovative initiatives to enhance their services and maintain long-term partnerships with retailers, whereby retailers could work with key players in the TSOs to find ways to match the needs of consumers and simultaneously maintain profitability.

The overall evaluation process provides two key findings. First, it indicates the usefulness of the model in practical scenarios. Second, it emphasises the fact that, in real-life situations, partnerships with the TSOs are much more complicated than can be represented in a model. This is due to the fact that TSOs are mostly underfunded and suffer from a lack of expertise, logistics, and space. All of these factors make them vulnerable when representing themselves as potential leaders in the area of re-use.

The barriers mentioned above are reinforced by the fact that one of the regional-level TSOs was liquidated in the study period. Therefore, alongside incorporating feedback

from the experts, the reviewed collaborative re-use models highlight the TSOs' concerns (see Appendix 9.6.3, Figure 9.7 to Figure 9.10).

Nonetheless, the organisations' positive response to the functioning of the models, and their willingness to engage with the various 'options', suggest that the collaborative re-use models can be considered as a research tool for future studies on the longevity of re-use behaviour. In particular, future studies can focus on investigating long-term re-use of bulky furniture and construction materials, as R3 and C1 emphasised during the revisit that they are in the process of upgrading their waste management strategies in line with the circular economy principles, and indicated that the collaborative re-use model for bulky furniture and construction materials respectively would add value to the process.

7.4 SYNTHESIS

This section sets out to synthesise the findings from the literature and empirical study that led to the development of models, which were then validated, as indicated above. The aim is to draw out lessons in a transparent manner and to enable conclusions to be formulated.

One of the semi-structured interview results indicates that the years 2010 to 2012 were a significant period for the development of re-use activities. This is because, although sustainable strategies and agendas were revised by the interviewed organisations in the years 2008 and 2009, it was only after 2010 that re-use activities and projects became visible (Section 6.2.1).

As indicated in Chapter 1, UK industry went through a sharp recession in 2008 and 2009 (Hopkins and Elliott, 2009; Wearden, 2009). A sharp fall in GDP (-5.0 per cent) affected all sectors of the economy, with significant effects on manufacturing and construction (Parliamentary business, 2010). It was only by mid-2010 that the manufacturing and service sector saw the first signs of recovery after the recession, which prompted a burst of optimism (Hopkins and Elliott, 2009; Parliamentary business, 2010; Wearden, 2009).

It was during this recessionary period of 2006–09 that Ellen MacArthur travelled around the world meeting experts across countries, economies and industries in order to better understand a global approach to the ways in which the economy uses resources (EMF, 2013a). Furthermore, it was during this period that the OECD introduced the concept of decoupling (UNEP, 2011), whereby absolute decoupling is defined as 'no waste growth' (Sgostrom and Ostblom, 2010, p.1550). Additionally, through the introduction of the concept of the 'Big Society' in this period, government gave power to communities to

encourage pro-environmental behaviour change (Fudge and Peters, 2011; Monbiot, 2015; Pattie and Johnston, 2011). When the events, factors, and innovations mentioned above are combined, in this research context, they can be considered to be driving towards an everyday activity – that is, encouraging re-use behaviour.

Elaborating on this, re-use is one of the principles of the circular economy and can be considered as contributing towards the 'Big Society' initiative because of the environmental and social benefits integrated within re-use activities. Additionally, re-use at the organisational level forms part of the zero waste to landfill programme and the waste hierarchy, and is identified in this research as a 'human action' activity that can be considered to contribute to achieving absolute decoupling. This indicates that the 2008 and 2009 recession prompted stakeholders to accelerate change, which often requires strengthening regulations (such as of re-use) as one of the ways to attain stability and consumer trust in the market, thus enhancing the visibility of re-use. Figure 7.6 below represents this analysis of the research in schematic form.

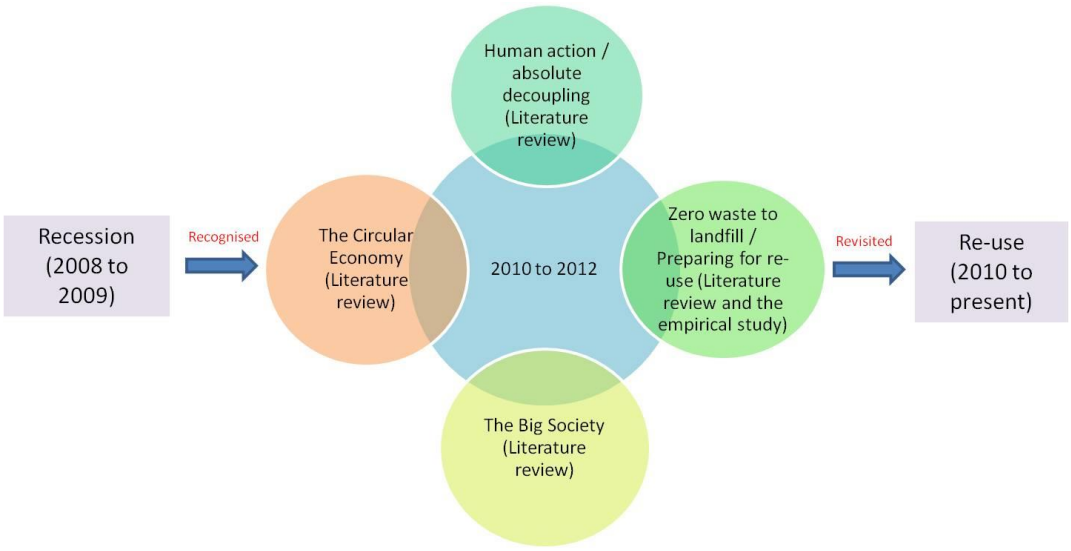


Figure 7.6: Re-use visibility

This research synthesises that the 2008–09 recession in the UK can be considered one of the factors that forced corporations to make holistic changes. Furthermore, the sudden desire for social change and the need to regain the trust of customers and the community can be considered as part of the driving force that facilitated large-scale TSOs (regional and national-level) and local-level TSOs (beneficiaries of large TSOs) to pitch their re-use ideas to corporations for attaining partnerships.

Additionally, corporations' facilitation of the circular economy, the indication of compliance as one of the major influencing factors, and a need to become more

transparent in order to fulfil CSR can be considered part of initiating re-use projects with TSOs.

This can be further validated by the fact that the collaborative re-use models indicate that, based on specific scenarios, re-use activities can achieve real net benefits within organisations, thus positively impacting society as a whole. These represent positive values and go beyond a solely economic gain for businesses, thereby valuing people, regenerating the environment, and boosting the economy in innovative ways.

7.5 CONCLUSION

The evaluation and synthesis re-emphasise this study's finding that re-use can be considered a 'human action' environmental solution that plays a part in the movement towards achieving an absolute decoupling. TSOs are primary facilitators of this. Nonetheless, at present, the success of this particular 'human action' solution depends on certain variables, namely: the type of materials, and the type of organisation. Furthermore, at this point re-use is in its nascent stages of development (in its current form, at least: as the literature indicates, re-use is a very old practice which has been sidelined through the rise of consumerism). Moreover, semi-structured interviews and evaluations indicate that retailers are recognising that unsold stock (a part of re-use) is an element that requires improvement by streamlining and better balancing their supply and sales of materials so that they are left with fewer materials. Therefore, they are investing in in-house development and manufacturers to progress to the top of the waste hierarchy by moving towards designing out waste (a part of prevention). This is also evident among the construction organisations.

The following chapter provides the conclusions and recommendations of this research by tying the findings to the initial aims, objectives, and research questions. The chapter also suggests a place and future use for the CEBA pro-environmental framework.

8. CHAPTER EIGHT: CONCLUSION AND RECOMMENDATIONS

8.1 INTRODUCTION

Re-use is identified in this research as currently being in a nascent stage of development. Therefore, its long-term effects at the leading organisational level can only be assessed over the coming decades. Nevertheless, the findings from this study illustrate that material-type and organisation-type are key factors influencing re-use as a waste management activity.

Re-use aims to decouple corporations' need for resources from their economic growth. In such a transformation, re-use of materials can play a part in providing a shift in approach, allowing for the necessary economic expansion while reducing the need for newly-sourced materials, thus contributing to the movement towards an absolute decoupling. As this study has shown, collaborative re-use measures and the facilitation of TSOs plays an important role in this process.

By revisiting the research aim, objectives, research questions, literature, and empirical study, this chapter provides the conclusion of this thesis, and makes recommendations on this basis (Figure 8.1).

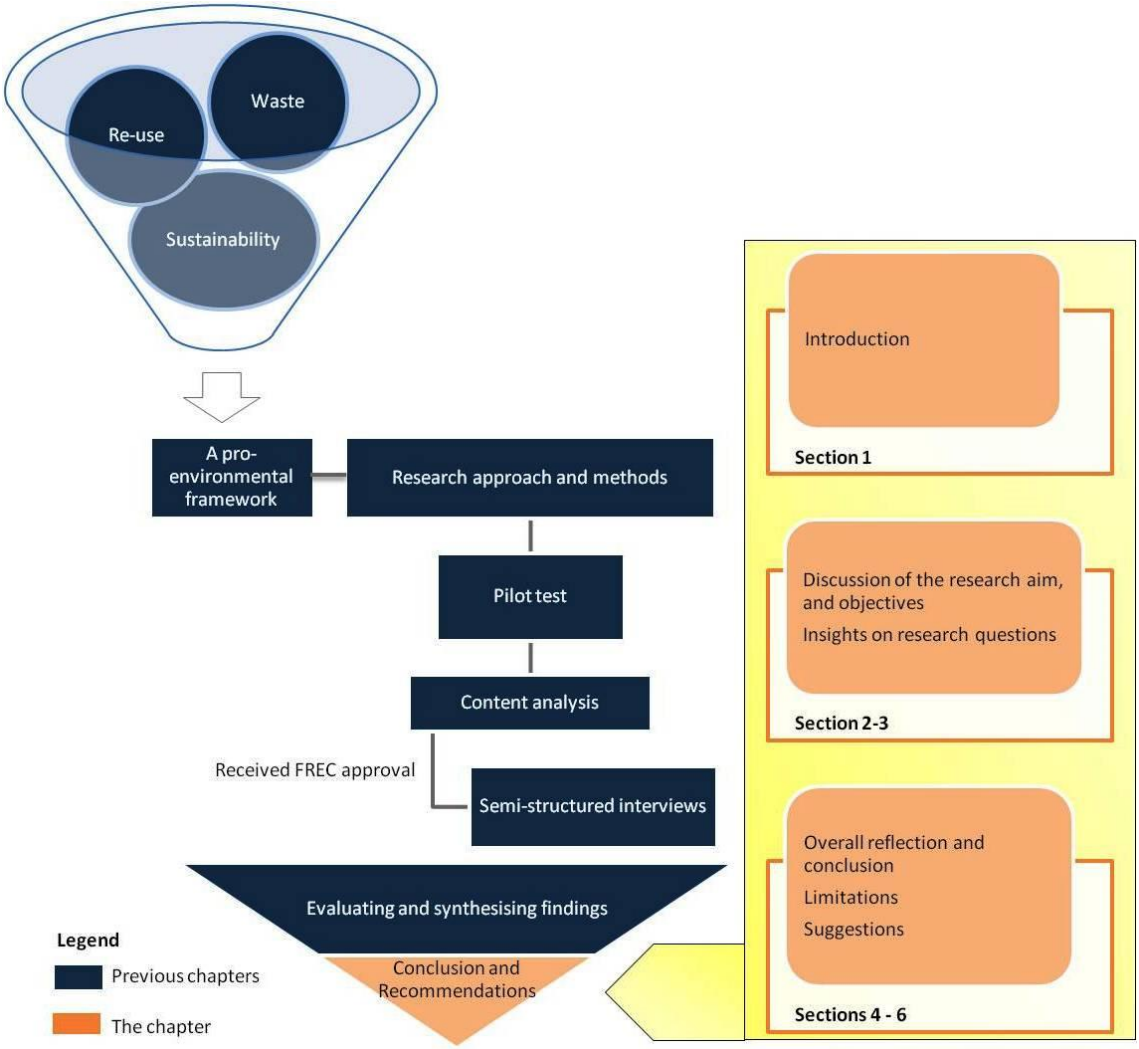


Figure 8.1: The Conclusion and Recommendations chapter

8.2 DISCUSSION OF THE RESEARCH AIM AND OBJECTIVES

The following research aim is provided in Chapter 1:

> this study investigates perceptions of re-use in UK corporations and their re-use supply chains, and the factors facilitating and preventing the re-use of materials from becoming normal practice. The focus is on those organisations that are identified as being in the vanguard of moving up the waste hierarchy by the Waste and Resource Action Programme (WRAP) 2012 and 2013 business case studies.

This aim has been fulfilled by applying the approach systematically while following the objectives of this research as discussed going forward.

8.2.1 Review and analyse a body of key literature that provides examples of technological and human-based waste management techniques that are facilitating progress towards decoupling

When reviewing the literature on waste management techniques and decoupling, it was identified that current dominant waste management techniques (namely recycling, recovery and disposal) and similar technological waste management solutions that facilitate remanufacturing can be considered as part of the solutions to achieve relative decoupling. However, significant concerns remain about the increasing use of resources, the rise in consumption and the growing levels of waste production.

The literature review demonstrated that technological solutions are not sufficient to meet the challenges posed by climate change. As Pearce and Barbier note, these approaches involve 'rethinking the problem rather than solving it' (2000, p.250). Thus, this research emphasised that considering human-based solutions to help achieve an absolute decoupling is essential in the current economy.

Absolute decoupling is a no-waste-growth solution that endeavours to discover a middle ground or consensus between conventional economic growth and waste reduction in order to protect the environment (Chatterton and Style, 2001). Re-use was hypothesised to be a potential means of achieving such decoupling. Re-use is a purely human-based waste management technique that remains an underexplored area of research.

8.2.2 Review and analyse literature on the re-use of materials, demonstrating its effect as a human-based environmental solution in the modern economy

Re-use of materials is primarily focused at the household-level rather than the organisational level in the UK. Studies have indicated that limitations of knowledge, space, logistics, accessibility, and resources are some of the common challenges that prevent re-use from becoming a normal practice. Nevertheless, the social, economic, and environmental benefits of re-use activities to society and organisations were identified in the literature as the driving force towards adoption of re-use practices.

TSOs demonstrate a commitment and determination to gather resources that they need to support their charitable and social aims. However, the literature review identified a paucity of studies on the re-use of materials at the organisational level. Therefore, recognising the existing gap in the literature and identifying a continuous rise in

consumption and waste production at the organisational level as one of the major issues contributing towards unsustainability, this thesis focused on investigating re-use behaviour at the organisational level.

This research went on to explore key behaviour change studies at the organisational and the household levels, identifying the importance of the salient environment for facilitating change. With this focus, this research investigation narrowed down to pro-environmental behaviour studies.

8.2.3 Review and analyse a selected body of pro-environmental behaviour literature, to identify categories and variables of behaviour change and its maintenance for use in the research investigation

In Chapter 3, pro-environmental studies were selected using snowball sampling and were analysed using an inductive approach. The selected studies are identified as being applied in both organisational and individual behaviour investigations. This combination might be viewed as unsuitable for the topic at hand, as the research investigation is at the organisational level. However, organisations are made up of individuals, and organisations' and individuals' behaviour patterns are therefore intertwined (Campbell, 2007; Cleek and Leonard, 1998; Thomas *et al.*, 2004).

Considering only the pro-environmental behaviour studies at the organisational level would have led to misrepresentation and loss of valuable information. In turn, this would have hampered efforts to effectively engage with the individuals within organisations to understand their perceptions of re-use (a pro-environmental behaviour) and the mechanisms and barriers they face within their organisational re-use activities.

The analysis of pro-environmental behaviour studies led to the development of a pro-environmental framework called CEBA (Communication, Engagement/action, Behavioural maintenance, and Avoidance of the value action gap). CEBA was utilised as an analytical tool in the research investigation.

One can only investigate re-use behaviour and evaluate the factors facilitating its maintenance when each of the CEBA categories and its variables are acknowledged and strategically accounted for when applying the framework to real-life situations. This is because the categories and variables are interdependent. Therefore, the unavailability of a single category or variable, or the breaking of a single link, can act as a barrier to investigating behaviour change and its maintenance. Depending on the social context,

type of organisation, and the type of re-use materials each organisation specialises in, some links (categories and variables) may be more important than others.

8.2.4 Develop research approach and methods for empirical research of perceptions of re-use among UK corporations and their re-use supply chains, with particular focus on those organisations that the WRAP identifies as being in the vanguard of moving up the waste hierarchy

Chapter 4 elaborates the development of the methodology for this research. Due to the paucity of evidence on re-use of materials, and acknowledging the tentative analysis from the pilot study, CEBA was shown to be an analytical tool applicable to a broader sample. Furthermore, acknowledging some of the key studies on qualitative and quantitative methods (such as Creswell, 2014; Grix, 2004), the mixed-methods approach was identified as the most appropriate methodology, and was applied in a sequential manner (Section 4.3.2).

The results from the content analysis enabled me to develop semi-structured interview questions to carry out an in-depth investigation of corporations and their re-use supply chains to obtain a holistic view on re-use behaviour. Furthermore, any similarities and/or contradictions in the findings of the two methods were addressed in the semi-structured interview chapter findings. The use of CEBA as an analytical tool established consistency among these two distinct methods, through the analysis of the information gained from both methods against CEBA categories and variables.

8.2.5 Empirically examine and analyse factors that facilitate and prevent re-use of materials from becoming normal corporate practice

In carrying out this research investigation, the pro-environmental framework, called CEBA, and the research approach and methods played an important role. The results from the content analysis provided evidence of a proven motivation at the leading organisational level in moving up the waste hierarchy. Nonetheless, due to the diverse nature of the sectors, it was found that the range of actions and their formal embedding differs from organisation to organisation. Nevertheless, third sector organisations (TSOs) were identified as a common supply chain of corporations that engage in re-use activities through collaborative means. With regards to the semi-structured interviews, the questions were prepared in two formats, and aligned with CEBA. The factors, mechanisms, and barriers identified by the participants were analysed to produce the study's findings.

The findings achieve this research aim by uncovering the perception of re-use among corporations and their re-use supply chains. That is, the meaning of re-use is identified as being ambiguous. Nevertheless, economic profitability of re-use is identified as one of the driving forces for corporations to consider re-use as a viable activity through which to collaborate with TSOs. The current challenges that corporations face and the mechanisms they apply to facilitate re-use practice are elaborated on in Chapter 6.

8.2.6 Evaluate and synthesise the findings to assess the longevity of re-use behaviour at the leading organisational level and provide conclusion and recommendations for further studies

Alongside evaluating TSOs as primary facilitators, the evaluation and synthesis process enabled the development of collaborative re-use models as one of the solutions that clarifies the heterogeneous (and potentially contradictory) nature of the phenomenon considered in this research.

Depending on the material-type and organisation-type, collaborative measures can play a part in solving the quandary of decreasing consumption and waste while sustaining profit. However, the conclusion of this research is based on the perceptions and examples of those organisations that are considered to be at the vanguard of waste management, as they were chosen from the WRAP business case studies of 2012 and 2013. Therefore, this research recognises that these models may not apply to other organisations. Nevertheless, the models can be utilised as a research tool to facilitate future re-use studies on retailers, construction companies, and TSOs.

8.3 INSIGHTS ON RESEARCH QUESTIONS

The following research questions were formulated to direct the research:

8.3.1 Research Question 1: How do corporations identified by the WRAP 2012–13 case studies as being in the vanguard of moving up the waste hierarchy perceive re-use?

The definition of re-use provided by DEFRA in 2013 was used as a benchmark in the investigation: ‘buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector, include reclaimed)’ (2013b, p.5).

The investigation used a sequential mixed-methods approach. The first part was a content analysis of 36 organisations (retail, construction, waste services, manufacturing, the third sector and others). The findings indicated an established awareness of certain approaches to waste management, and thus reflected on the organisations' attitudes (Chapter 5). This analytic foundation then provided a firm basis for carrying out semi-structured interviews (Chapter 6).

The semi-structured interviews involved 11 corporations (five retailers, two construction companies, two waste service providers and two manufacturers) and eight third sector organisations (TSOs). The participants' perceptions of re-use are elaborated on in Chapter 6, Section 6.2.2, and the corporations' perceptions are further summarised as follows.

Among the manufacturers, on the one hand, M10 suggested expanding the DEFRA definition of re-use by indicating that

> my own opinion is that the re-use definition given by government should be expanded to include that the products or components (providing their physical composition does not alter) can also be used again for alternative purposes.

On the other hand, M1 presented a misconception about the term 're-use', in that they consider the practice of reprocessing to constitute re-use. M1 said that

> in terms of re-use, it is waste that is used again, we do not try to take good materials and then re-use it. So for us, we will take the waste that is processed as re-use and send to somebody else to re-use it for something else. For example, we introduced the Back to the floor scheme in 2012, where we take-back our own flooring off-cuts to reprocess and remanufacture.

This perception of M1, that reprocessing and remanufacturing (the technological ways of managing waste) constitute, re-use is also highlighted in the literature review (Section 2.3.1).

As part of gathering perceptions of re-use, manufacturers were also asked if they consider unsold stock to be part of it. On the one hand, M10 does not consider the unsold stock as re-use, but on the other hand, M1 said

> the unsold stock, because it would have a commercial value, so it would go to a process whereby it would be sold at less price. Over time if we need to clear our space because it is becoming uneconomic to store it, we have two choices: one is either dispose of it; or, if we have the infrastructure, to send to re-use for charity. At this point, it becomes waste to the business and re-use to others.

Similar to the manufacturers, retailers (R0, R1, R2, R3 and R4) were also asked about their definition of re-use and whether they perceive unsold stock to be part of that category. It was found that retailers relate re-use with the unsold stock, and their perception of it varies depending on the types of material. For example, R1, a food retailer, said that they perceive unsold food stock as waste and not re-use, unlike R0, R2 and R3, who consider unsold bulky furniture as re-usable through donations. R4, a mixed retailer, also defined donation of textiles as re-use. However, R4 misperceives technological means of reprocessing textiles (such as via refurbishment and refashioning) as re-use.

With regards to gathering perceptions from construction organisations (C1 and C5) and waste service organisations (W1 and W2), the unsold stock did not form part of their semi-structured interviews (Section 4.4.4.1). Therefore, they provided their perception of re-use based on the above-mentioned DEFRA definition.

Among the construction organisations, both C1 and C2 indicated that their understanding of the concept is not limited to the DEFRA definition. Instead, they consider even situations in which the product is being used for a different purpose to constitute re-use, as long as it is kept in the same format and is not reprocessed.

The perceptions of construction organisations mentioned above show that, unlike manufacturers (M1 and M10) and the retailer (R4), C1 and C5 do not misperceive re-use as reprocessing, a technological way of managing waste. Nevertheless, their perceptions on re-use shed light on the definition of re-use given by the OECD, which involves ‘the multiple uses of products, either for the original, or an alternative purpose’ (DEFRA, 2004, p.3).

Finally, among the waste service organisations (W1 and W2), understanding of re-use aligns with the DEFRA definition. For instance, W2 said that ‘for us, the meaning of re-use is same as given by the government; where something is used again for the same purpose’.

The research revealed that re-use is a complex phenomenon. The understanding of re-use and the application of re-use strategies vary according to the organisation-and material-type. Thus, while relating to the discussion on various definitions of re-use in the literature (Section 2.4) with the aforementioned variations regarding perceptions of re-use, this thesis concludes that the misconceptions and variations in understanding of re-use occur because the current waste hierarchy presents a gap, insofar as the practices of both re-use

and remanufacturing (despite their differences) are defined under the same category of 'preparing for re-use' in the waste hierarchy. Therefore, to overcome this barrier, this research suggests that 'preparing for re-use' can be revisited in the waste hierarchy by separating re-use from remanufacturing (Figure 8.2) (Tavri, 2017).

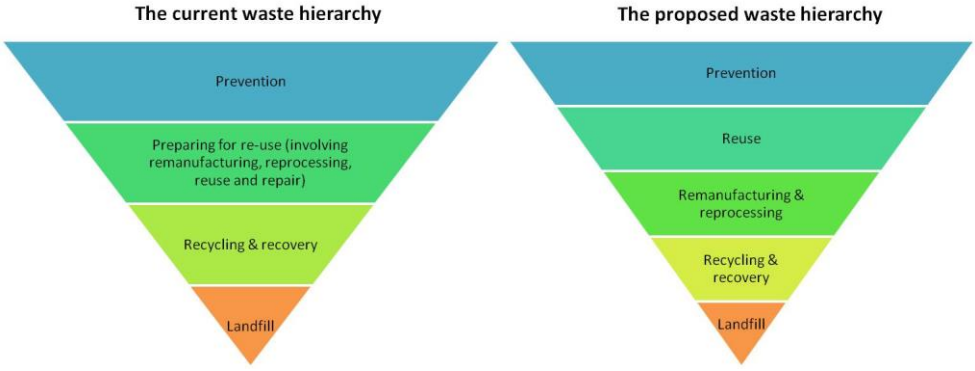


Figure 8.2: The proposed waste hierarchy (the current one adopted from DEFRA, 2013a)

In addition, and relating to the discussion on the various definitions of re-use in the literature (Section 2.4) with the suggestions of manufacturers (M10), construction organisations (C1 and C2) and TSOs (that formed part of the semi-structured interviews), the following definition of re-use is proposed: 're-use involves employing a previously used item for any purpose, as long as it is in the same format and has not been reprocessed'.

The differences mentioned above in the perception of re-use shows a gap in the understanding of re-use among organisations. A particularly significant gap lies in relating re-use, a purely 'human action' solution, to technological solutions such as remanufacturing.

8.3.2 Research Question 2: How do re-use activities enable vanguard corporations and their re-use supply chains to reconcile the objectives of supporting waste reduction through re-use with maintaining and growing their economic returns?

Re-use, a purely 'human action' approach to waste reduction, is the second priority in the waste hierarchy (after prevention), which indicates it is a better option for reducing waste production than the current, commonly adopted technological means of managing waste (recycling, recovery and disposal).

The varying perceptions about re-use, and uncertainties regarding its long-term benefits demonstrate that, at this moment, re-use is at a nascent stage of development (Chapter 6).

The research elaborates on the challenges organisations face in practising re-use, which represents a gap in the waste and resource industry.

In particular, for the manufacturing and waste services sectors, re-use is considered to have no economic benefit. The manufacturing sector (M1 and M2) considers space, infrastructure and logistics as significant barriers to re-use. Waste services organisations (W1 and W2) view re-use as a risk to their business, which is predominantly focused on recycling, recovery and disposal. Thus, both sectors consider remanufacturing, reprocessing and recycling (technological solutions or 'science first' model) as economically viable and environmentally friendly options.

Nonetheless, research findings (Chapter 6) demonstrate re-use examples, particularly among retailers (R0, R1, R2, and R3), construction organisations (C1 and C2) and both of their re-use supply chains (TSOs that formed part of this research), presenting the type of materials that are identified as having social, economic and environmental benefits through re-use. These materials are bulky furniture, WEEE (waste electrical and electronic equipment), food and construction materials. The ways in which re-use of these materials enable corporations and their re-use supply chains to reduce waste production and maintain economic growth is elaborated in the form of collaborative re-use models (Chapter 7, Section 7.2). This is further summarised as follows.

This research identified two ways in which the re-use of bulky furniture enables retailers (R0 and R3) to reduce waste production while maintaining profitability. In the first way, retailers (R0 and R3) donate unsold stock and/or second-hand furniture with the support of the national-level TSOs (such as T11, which specialises in bulky furniture) to various local-level TSOs (registered with national-level TSOs) in the area. This implies the interdependence of national-level TSOs and local-level TSOs. In the second way, retailers (R0 and R3) donate unsold stock and/or second-hand furniture directly to various local-level TSOs (such as R6) in the area (Section 7.2.1).

In both the ways, retailers (R0 and R3) save money by diverting bulky furniture from becoming waste to re-use. The ways of carrying out re-use of food materials were identified to be similar to that of bulky furniture. However, unlike bulky furniture retailers (R0 and R3), the food retailer (R1) cited redistribution of food materials to the charities (re-use) through both ways as less economical in comparison to reducing the production of surplus food stock. This indicates their moving further up the waste hierarchy to prevention. Such an outcome is even more desirable than re-use, as this enables less food production, thus leading to waste reduction while maintaining profitability.

The collaborative re-use model for WEEE (Section 7.2.3) demonstrates how re-use of WEEE is carried out among retailers (R2) and TSOs (T7 and T9). It was found that retailers (R2) consider it profitable to donate unsold stock or second-hand WEEE to various local-level TSOs (registered with national-level TSOs), with support from national-level TSOs (such as T7). Specifically, R2 said that 're-use is considered long-term as it is usually cheaper than recycling' (Section 6.2.3). However, the process by which retailers (R2) donate unsold stock or second-hand WEEE directly to various local-level TSOs not registered with national-level TSOs (such as T9) in the area seems to result in an equilibrium, gaining no profit and incurring no loss. This indicates that, despite the waste reduction and social benefit, re-use of WEEE only seems to maintain profitability when retailers (R2) are in partnership with national-level TSOs (such as T7). This reiterates the importance of the size of the organisation, which enables similar corporate thinking, reputation and credibility.

With regards to the re-use of construction materials, the research has identified three approaches. The first is the process in which re-usable construction materials are used by contractors on the same project. The second is the process whereby, at the end of the project, leftover construction materials are re-used elsewhere, i.e. re-usable construction materials are either taken away for use at other construction sites (clients') or are stored in their original owners', or contractors', storage facilities. The third way is the process by which construction organisations (C1 and C5) donate re-usable materials to their local-level TSO partners (either registered or not registered with big TSOs (such as T5 and T8)) for re-use, reclaim or refurbishment purposes.

Construction organisations (C1 and C5) have indicated benefits from re-use leading to reductions in waste production while maintaining profitability. For instance, C5 said that 'in one of our recent projects we managed to divert 10.8 tonnes of waste from landfill to re-use' (Section 6.2.3). Furthermore, C1 said that the intention to re-use 'drives the projects team to find ways that they can save money, improve their waste performance and benefit the local community at the same time' (Section 6.2.1). C5 further said 're-use to us is not only about environmental savings, but not disposing of materials for recycling and landfill also provides substantial cost savings' (Section 6.2.2).

The research reiterates the complexity of re-use by demonstrating the different ways in which re-use activities solve the seemingly irreconcilable contradiction between the imperatives of economic benefit and waste reduction. However, the longevity of such solutions can only be explored in the coming decades.

8.3.3 Research Questions 3: What factors facilitate and prevent re-use of materials from becoming normal corporate practice among the vanguard organisations?

The research findings show that collaboration among corporations and TSOs is the key factor for facilitating the re-use of materials, wherein the shared intention for corporations is having economic benefits, while for TSOs it is achieving social benefits. In particular, in this research, the following collaborations are identified as facilitating the re-use of materials: partnership among retailers (R0, R1, R2, and R3) and their re-use supply chains (T6, T7, T9, T11), and partnership among construction organisations (C1 and C2) and their re-use supply chains (T5 and T8).

The partnerships above are discussed and presented visually in the form of collaborative re-use models (Section 7.2), indicating that factors required for facilitating the partnership vary depending on the type of materials. This is summarised as follows.

In order to facilitate re-use of bulky furniture among retailers (R0 and R3) and national-level TSOs (such as T11), space, logistics, localism, economic benefit, corporate thinking, reputation, and credibility are identified as key factors. Along similar lines, for maintaining a partnership of retailers (R0 and R3) with local-level TSOs (whether registered with national-level TSOs or not) to facilitate re-use of bulky furniture, space, credibility, localism, and economic benefit are identified as important factors.

Similarly, for facilitating re-use of food materials among retailers (R1) and national-level TSOs (such as T4), space, logistics, economic benefits, corporate thinking, reputation and credibility are identified as key factors. Along similar lines, for maintaining a partnership of retailers (R1) with local-level TSOs (both registered and not registered with national-level TSOs) to facilitate re-use food materials, space, credibility, localism and corporate thinking are identified as important factors.

In the same way, for facilitating re-use of WEEE among retailers (R2) and national-level TSOs (such as T7), space, logistics, localism, economic benefit, corporate thinking, reputation and credibility are identified as key factors.

Finally, for facilitating re-use of construction materials among construction organisations' (C1 and C5) and local-level TSOs (such as T5 and T8), space, logistics, localism, credibility, economic benefit, and corporate thinking are identified as key factors.

This research re-emphasises that a single barrier to any of the facilitating factors can pose a barrier to the re-use of materials becoming a normal practice. In particular, among all the factors above, economic benefit is identified as one of the major indicators for corporations to shift from re-use to other technological means of waste management. For instance, among retailers and construction organisations, technological preventive measures such as designing out waste (moving to the top of the waste hierarchy) are identified as a means of streamlining and better balancing their supply and sales of materials.

On the other hand, among manufacturers (M1 and M10), re-use is only considered of achieving a financial equilibrium (i.e., gaining no profit and incurring no loss), while for waste service organisations (W1 and W2) it is a financial risk to their business. Therefore, they consider re-use to be less appealing and less viable than current dominant solutions to waste management, i.e., recycling, recovery and disposal. The motivation of corporations towards profitability is not surprising, as the purpose of business is to stay in business (Friedman, 1970).

The research further reiterates that, although TSOs are identified as important facilitators of re-use at the organisational level, national-level TSOs require partnerships and must build links with their local-level counterparts to make re-use the first option for corporations. However, the evaluation process indicated that, in reality, TSOs lack funding, which becomes a barrier to re-use practice (Section 7.3). This is evident as one of the regional-level TSOs (T10) is now closed down.

This research identifies important drivers to accelerate change. For corporations, compliance often functions, and the preservation of profit is always a motivation (Friedman, 1970). Therefore, TSOs, in partnership with corporations, can play a part in strengthening regulatory measures, such as the Single Use Carrier Bags Charges (England) Order 2015. This would aid in demonstrating the importance of engaging with re-use and emphasising both its crucial position within the waste hierarchy and also its positive effects within the industry. Assessment of its longevity can be explored in further studies.

8.4 OVERALL REFLECTION AND CONCLUSION

This research investigation of vanguard organisations' re-use behaviour in the UK through the mixed-methods approach reveals that, at present, re-use is in its nascent stages of development in comparison to the current dominant waste management practices of

recycling, recovery and disposal. The research further identifies the complexity associated with the re-use of materials. It indicates that, depending on the type of organisations and the type of materials, engagement in re-use and perceptions about re-use vary.

The research findings indicate that there are two key reasons behind corporations' lack of engagement in re-use behaviour: ambiguities and variations in their understanding of re-use; and the fact that, as a motivation, profitability supersedes the social benefits that re-use can attain, such as donations. For instance, the manufacturing organisations claim to receive no economic benefits from re-use, indicating that, though re-use has social benefits, at its current stage it can only result in equilibrium, i.e., gaining no profit and incurring no loss. On similar lines, for the waste service organisations, recycling and recovery activities form a major part of their business, and engagement with these solutions is relatively easy and has become normalised. Thus, they view re-use as an unappealing activity. In contrast, the research findings show that the retailers, the construction sector and both of their re-use supply chains consider themselves to be pioneers in the field of re-use. They consider the re-use of materials as a realistic practice that has economic, environmental and social benefits. Interconnections between parties in the re-use supply chain is critical. This is demonstrated in the form of collaborative re-use models (Section 7.2).

It is remarkable to note that of the organisations included in this research, in instances where corporations do not consider re-use as a potential activity, their re-use supply chains demonstrate a sense of frustration. In contrast, those that are undertaking several re-use activities for economic benefit are seen to be praised by TSOs (their re-use supply chain) for giving them an opportunity by trusting and believing in them. These contrasting expressions are evident in the messages of TSOs for corporations (Section 6.2.4.1).

The differences above reiterate the complexity associated with the re-use of materials. The findings further emphasise that organisations demonstrated differing interpretations of DEFRA's definition of re-use. Firstly, it was identified that organisations misidentify re-use as being the same as technological waste management solutions such as reprocessing and remanufacturing (Section 8.3.1). This highlights a gap in the waste hierarchy, wherein the practices of re-use and remanufacturing (despite their differences) are defined under the same category of 'preparing for re-use'. Therefore, this research suggests revisiting the waste hierarchy by separating re-use from remanufacturing (Section 8.3.1).

Secondly, one of the manufacturers, both construction organisations and TSOs (that formed part of the study) suggested amending the re-use definition. While aligning these suggestions with the discussion on various definitions of re-use in the literature (Section 2.4), this research recommended revisiting its definition (Section 8.3.1).

Overall, the research findings demonstrate that such uncertainties regarding re-use indicate that it is at its nascent stage of development, and it is far from becoming a norm. Nevertheless, the research reveals a range of solutions and challenges across the different sectors, and demonstrates how certain areas have made steps towards overcoming these challenges. Thus, the research concludes that despite the differences in the degrees of commitment to re-use behaviour across different sectors and organisations, and the varied understanding of what constitutes re-use, there is a common willingness and desire to find and engage with a mechanism of re-use (collaboration) that is beneficial for both organisations and society as a whole.

The research emphasises that the answer lies in the determination of the TSOs, those whose business is predominantly engaging with re-use, to make it work. This is in keeping with their business goal, as re-use has social benefits attached to it for the community, which is the main ethos of TSOs (Section 2.5). Additionally, they take pride in their achievements in this area. However, one of the TSOs (T10) went out of business in the study period, and this demonstrates a gap. Therefore, any viable solution has to take a holistic approach, which means that TSOs need to show an understanding of corporate language, commitments, and priorities, and not just the environmental and social benefits while ignoring corporations' need for any sustainable solution to generate profit. Such a holistic and sensitive approach has been demonstrated in the collaborative re-use models (Section 7.2).

This thesis is an initial foray into this underexplored and crucial area, which shares practical examples of re-use carried out by corporations (sector-wide) in collaboration with re-use supply chains (TSOs). The thesis provides instances where organisations have found solutions for facilitating re-use practice. This research investigation involved vanguard organisations, which means their actions represented in the collaborative re-use models may differ from those of other organisations. Nevertheless, the collaborative re-use models can be used as a research tool by further studies on re-use activities, in particular in studies among sectors dealing with bulky furniture, food, WEEE and construction materials.

It is important to emphasise that the study does not seek to claim that recycling and recovery (or any other technological solutions) are not significant, as they play an important part in moving towards achieving decoupling (Section 1.2). Nevertheless, re-use is clearly one such 'human action' that acts as an environmental asset that can play a part in contributing towards creating a middle ground or consensus between conventional economic returns and decreasing wastefulness in order to develop a sustainable path for the modern economy. However, its longevity is yet to be explored. Furthermore, the research findings raise intriguing questions that can form part of future studies: is re-use behaviour something that can be enforced by compliance and a top-down approach, or are re-use supply chains (predominantly TSOs) the real catalysts for change? Or is the optimum approach a combination of these?

At the time I began this research (in 2012), there had been very little exploration of re-use as waste management strategy, despite the social, environmental and economic benefits to stakeholders it poses. The research that had been done was primarily limited to households in the UK. The findings bring to light and accentuate both the potential benefits and also the limitations of re-use among the leading organisational level in the UK, offering important insights to various stakeholders, including academics, researchers, TSOs, corporations and regulators, as well as other interested parties.

It is hoped that this research will inspire more research interest in the area of re-use, and that the findings and recommendations of this research contribute to knowledge in the field of waste and resource management and pro-environmental studies.

Findings achieve this research aim by uncovering the perception of re-use among corporations and their re-use supply chains. That is, the meaning of re-use is identified as being ambiguous. Nevertheless, economic profitability of re-use is identified as one of the driving forces for corporations. This research has identified that collaboration is a key factor for facilitating re-use behaviour. It therefore emphasises the value of collaborating to develop an associative strength among organisations. We need to aspire to make re-use a norm, and be proud of re-using, as it is about making our economy a circular economy by uplifting re-use from the shadow of 'preparing for re-use' in the waste hierarchy.

8.5 LIMITATIONS OF THE STUDY

Every research study, however carefully planned, has limitations. The first limitation of this research is the selection of vanguard organisations from only the 2012 and 2013 WRAP business case studies. This led to a relatively small sample size for the empirical

study, of just 36 organisations. Nonetheless, the very fact that these organisations were gathered from the WRAP business case studies means that they exhibit similar features, in terms of being probable leaders in the field of waste management.

The content analysis study is also limited in the sense that the information provided in the organisational reports (that is: sustainability, CSR and annual reports) may be limited by a lack of detail or transparency, or by internal misrepresentation, and therefore may be insufficient to provide a top line benchmark of what organisations envisaged regarding their positions. As the content analysis study focused on reports from 2012 and 2013, subsequent changes in sustainability practices cannot be determined. Nonetheless, using the mixed-methods approach as the research methodology enabled me to conduct further in-depth analysis by carrying out semi-structured interviews of some of the corporations from the content analysis and their re-use supply chains. This process allowed for learning about subsequent developments among the organisations interviewed.

The second limitation relates to the semi-structured interviews. Aside from issues of misrepresentation and anonymity, a further limitation of this study is that the sample of interviewees was small (19 participants). Nonetheless, the participants in the semi-structured interviews involved experts from a range of organisations that scored from highest to lowest in the content analysis study. Furthermore, the use of the snowballing technique to recruit interviewees from the re-use supply chain provides a balance of corporations' and TSOs' involvement in the study. This aided in the production of a holistic picture of organisational perceptions about re-use and their behaviour towards it.

Another limitation with the semi-structured interviews is that only I know which responses were provided by which experts. Therefore, to reduce misrepresentation, during data analysis, and for clarity, in the place of organisations' names, coding was used to replace the names, and the information gathered was analysed by using Nvivo.

In this research, limiting the participants to organisations that are identified as being in the vanguard of waste management by the WRAP 2012–13 case studies can be considered a limitation, as this selection narrowed down the research investigation to probable leaders in waste management and their re-use supply chains. Due to the aforementioned focus, the results from the empirical work led to the formation of collaborative re-use models that can be used as a guidance tool in real-life situations, but only to a relatively narrow context (i.e., to those retailers and their re-use supply chains that are dealing with bulky furniture, WEEE and food materials, as well as the construction organisations and their re-use supply chains (Section 7.2–7.3)).

If participants had been selected randomly (such as by involving laggard organisations), the result could have applied to the wider audience. However, even among the vanguard organisations, re-use was found to be in its nascent stages of development. This thesis argues that not limiting the investigation to vanguard organisations could have overshadowed the re-use behaviour focus by deviating the thesis towards recycling, recovery and disposal (the most common practices). This is demonstrated by one of the findings from the content analysis that, even among vanguard organisations, only 50 per cent showed strong evidence of re-use, whereas 89 per cent showed strong evidence of recycling, thus demonstrating the dominance of recycling over re-use (Section 5.3.3).

In this research approach and methods, findings from the content analysis were used to develop questions for semi-structured interviews (Section 4.4.4.1). Such a mixed-methods approach, if applied in randomly selected organisations, would have resulted in different conclusion and recommendations.

Another limitation acknowledged is the lack of involvement of important stakeholders. For instance, local authorities are recognised in the literature as one of the key players in facilitating re-use behaviour. However, their involvement is predominantly focused at the household-level, which, as recommended in Section 8.6, can form part of a whole different investigation. Furthermore, the focus was narrowed down to corporations and TSOs (Section 2.5).

Finally, the CEBA pro-environmental framework can be viewed as being in the nascent stages, and thus relatively open for further development given that it has only been applied as part of this research investigation. Nonetheless, the findings suggest that CEBA acts as a useful and robust analytical tool to carry out pro-environmental (re-use) behaviour investigations. Furthermore, CEBA has received validation from the academia by forming part of a peer-reviewed article (Tavri, 2019a).

Because this thesis represents a preliminary foray into the applicability of CEBA, both from a theoretical and an empirical viewpoint, such limitations are inevitable. However, as one of the very few studies in this area, it is believed that the findings create substantial opportunities for further research into the implications of approaches to waste and resource management sector in real-life situations.

8.6 SUGGESTIONS FOR FURTHER RESEARCH

As mentioned above, this research project was limited in both time and scope. However, the conclusions and findings raise research questions, which provide suggestions for future investigations. These are now briefly explored.

8.6.2 Suggestion 1

A practice-based investigation can be carried out whereby the collaborative re-use models that are developed and evaluated as part of this research finding can be used as a research tool in future studies on re-use. As a reminder, these revised collaborative re-use models are for bulky furniture (Figure 9.7), construction materials (Figure 9.8), food materials (Figure 9.9), and WEEE items (Figure 9.10).

8.6.3 Suggestion 2

A similar investigation to this thesis can be carried out on TSOs and local authorities, whereby the analysis and findings from this research could be used as part of the investigation.

Such an investigation could assess the challenges that TSOs face and the mechanisms that they apply to facilitate re-use practice. This could shed light on the role of local authorities as primary partners and gather their perceptions on the re-use of materials.

8.6.4 Suggestion 3

This research has advised separating ‘re-use’ from ‘preparing for re-use’ in the waste hierarchy. An investigation could be carried out to evaluate the industry-wide relevance of this suggestion. Furthermore, Section 8.3.1 provides the definition of re-use suggested by some of the participants, which could also form part of future studies on re-use.

8.6.5 Suggestion 4

CEBA is a pro-environmental framework that has been developed by analysing selected pro-environmental behaviour studies. This research finding indicates that it acted as a useful analytical tool in the investigation of re-use behaviour at the organisational level. It is considered to provide a structured and systematic process for carrying out this research. Therefore, it is recommended that the framework be considered in future pro-

environmental behaviour investigations to assess and test its viability for wider areas of environmental behaviour studies.

8.6.6 Suggestion 5

The Single Use Carrier Bags Charges (England) Order 2015 is the only regulatory measure that has focused on facilitating re-use behaviour in the UK at present. An investigation can be carried out to analyse the positive and negative effects of this law on big retailers and TSOs or charities which benefit from it and also the environment. The law could be assessed to examine if and how it has contributed towards achieving an absolute decoupling.

9. APPENDICES

9.1 APPENDIX I

9.1.1 Waste and Resource Action Programme (WRAP)

WRAP became a registered charity in 2014. It is from 2004 to 2016, WRAP has launched several campaigns, agreements, and publications to accelerate the move to a sustainable and resource-efficient economy (Table 9.1).

Table 9.1: WRAP's history (WRAP, 2018a)

2000	To promote sustainable waste management in 2000 WRAP (Waste and Resources Action Programme) was launched.	-
2004	'Recycle Now' campaign was launched which, in its first year was taken up by 60% local authorities. It is the national recycling campaign for England, which is currently used locally by over 90% of English authorities (Recycle Now, 2018).	recyclenow
2005	WRAP published 'PAS100' to enable the composting industry to demonstrate their quality of product. The Publicly Available Specification (PAS) 100 is part of WRAP's ongoing work that is committed to develop market for quality compost products. The compost specifications and guidelines were designed by WRAP while working with Association For Organics Recycling (AFOR) and the Growing Media Association (WRAP, 2018b).	-
2005	'Courtauld Commitment 1' is a voluntary agreement designed to reduce waste across the UK grocery sector. It was formed to help reduce food waste and packaging from households by implementing new solutions and technologies (WRAP 2018c).	-
2006	WRAP published 'Environmental Benefits of Recycling' which demonstrated the superiority of recycling over other ways of managing waste.	-
2007	'Love Food Hate Waste' consumer campaign was launched. This campaign provides some easy practical everyday things for the consumers to do at home, which can help customers to save money and also to reduce food waste (Love Food hate waste, 2018).	LOVE FOOD hate waste
2008	WRAP published research 'The Food We Waste' which they claim showed for the first time the true extent of waste.	-
2009	Over the four-year period of Courtauld Commitment 1 (2005–9), 1.2 million tonnes of food and packaging waste was prevented, saving 3.3 million tonnes of CO2e (carbon emissions)	-
2009	WRAP published 'Meeting the UK Climate Change Challenge: The Contribution of Resource Efficiency' which showed that improving resource efficiency could contribute almost 10% of the required reduction in greenhouse gas emissions by 2020.	-
2009	In conjunction with the British Retail Consortium, WRAP launched a new 'on-pack label' to help consumers recycle packaging more easily. The On-Pack Recycling Label (OPRL) was published in response to research that identified a need to communicate better with consumers about what types of packaging can be recycled (WRAP, 2018d).	OPRL THE ON-PACK RECYCLING LABEL
2010	'Courtauld Commitment 2', the second voluntary agreement for the UK grocery sector was launched. This was a continuation of the original Courtauld Commitment 1. It moved away from solely weight-based targets and aimed to reduce the carbon	-

	impact of grocery packaging, and cut supply chain and household food and drink waste (WRAP, 2018e).	
2010	'PAS110' quality standard for digestion was published by British Standard Institution (BSI), to enable the anaerobic digestion industry to demonstrate their quality of product. It provides specifications to the industry against which producers can verify that they are of consistent quality and fit for purpose. This enables to remove the major barrier to the development of Anaerobic digestion (AD) (WRAP, 2018f).	-
2011	WRAP published their review of 2008–11 business plan period, which showed that by 2011 they had helped divert more than 12 million tonnes of waste from landfill each year and avoided annual Co2e emissions of over 6 million tonnes.	-
2012	Between 2010 and 2012, Courtauld Commitment 2 achieved a reduction in waste of 1.7 million tonnes.	-
2012	'Hospitality and Food Service Agreement' was launched with more than 70 signatories, to support the sector in reducing waste. The agreement was closed in 2015 and the final results were published in January 2017 (WRAP, 2018g).	
2012	WRAP concluded their 'Halving Waste to Landfill agreement', which saw more than 800 organisations sign up. They further claim that the agreement positively influenced construction to the value of more than £40 billion.	
2012	WRAP successfully bid to lead an EU LIFE-funded project on 'Developing Resource Efficient Business Models (REBUS)'. REBUS aims to demonstrate how both large organisations and Small and Medium Enterprises (SMEs) can work with their supply chains to implement resource efficient business models in four key markets: electrical and electronic products, clothing and textiles, furniture and construction products (WRAP, 2018h).	
2013	'Sustainable Clothing Action Plan (SCAP)' was launched which aim at bringing together textile manufacturers and fashion brands to reduce water consumption, carbon emissions and waste.	-
2014	'Love Your Clothes consumer campaign' was launched to inspire and empower consumers to re-use and recycle clothing.	-
2014	'Electricals and Electronics Sustainability Action Plan (esap)', was launched with an aim to bring together electrical and electronics manufacturers and retailers to improve the business efficiency and sustainability of electrical and electronic products throughout their lifecycle.	-
2015	WRAP published the results of 'ARID programme' was a £14 million capital support programme ran between October 2011 and June 2015. ARID stands for - Accelerating Reprocessing Infrastructure Development. WRAP claim that this programme helped the recycling industry invest in Wales, recycling, re-using or reducing nearly 400,00 tonnes of waste and creating 178 new jobs.	-
2015	WRAP successfully bid to lead an EU LIFE-funded European Clothing Action Plan (ECAP), to reduce the waste, water and carbon footprints of EU clothing. Its approach encompasses sustainable design, production, consumption, public procurement, collection, recycling and reprocessing. The project focuses on the clothing supply chain, specifically to reduce waste and to bring about effective waste recovery (ECAP, 2018).	
2015	WRAP published their 'Food Futures' report which showed how the UK might move from 'business as usual' to 'business unusual'.	-
2015	WRAP successfully bid to lead an EU LIFE-funded Critical Raw Material Closed-Loop Recovery ('CRM Recovery') project to explore the commercial opportunities for harvesting critical raw materials from electrical products.	-

2016	WRAP launched 10 year producer to consumer voluntary agreement 'Courtauld Commitment 2025' - to make food and drink production and consumption more sustainable. It is an ambitious voluntary agreement that brings together organisations across the food system - from producers to consumers to make food and drink production and consumption more sustainable (WRAP, 2018i). Meeting the Courtauld 2025 targets will help the UK achieve UN Sustainable Development Goal 12.3 - *("By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses"* (Champions 12.3, 2018).	

9.1.2 Re-use Definitions

At the EU level, in relation to packaging, the Packaging and Packaging Waste Directive 94/62/EC29 defines re-use as:

> re-use shall mean any operation by which packaging, which has been conceived and designed to accomplish within its life cycle a minimum number of trips or rotations, is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled; such re-used packaging will become packaging waste when no longer subject to re-use (ECDGE, 2008, p.46–47).

Also at the EU level, in relation to vehicles, the ELV Directive 2000/53/EC30 defines re-use as 'any operation by which components of end-of-life vehicles are used for the same purpose for which they were conceived.' (ECDGE, 2008, p.47).

At the London level, within the Non-Government Organisation (NGO), the London Community Resource Network (LCRN) defines re-use in economic terms. The LCRN is a charity pioneering community solution to London's waste challenge. It was in 2008 when the Greater London Authority (GLA) Act 2007 formed the London Waste and Recycling Board (LWRB). The LWRB is one of the core funding bodies of the LCRN. The LCRN helps organisations to engage and involve communities in reducing, reusing, recycling, and redistributing resources - for maximum social, economic and environmental benefit (DCLG, 2012; www.lcrn.org.uk). The LCRN and the Steering group (comprising of representatives of the commissioning bodies: the Greater London Authority in partnership with the Government Office for London, the London Councils, the North London Waste Authority, the London Recycling Officers Group and the Association of London Cleansing Officers) define re-use in economic terms as:

> an item or material which becomes unwanted by the current owner but it is still considered to be useable and have an economic value. The owner has, however, decided to write off its value to expedite its removal and in doing so the item or materials have the potential to enter the waste stream or alternatively be offered for re-use to a re-use organisation (LCRN, 2008, p.1).

[29] This Directive provides for measures aimed at limiting the production of packaging waste and promoting recycling, re-use and other forms of waste recovery. It covers all packaging placed on the European market and all packaging waste, whether it is used or released at industrial, commercial, office, shop, service, household or any other level, regardless of the material used (EUR - Lex, 2018a).

[30] It sets out measures to prevent and limit waste from end-of-life vehicles (ELVs) and their components and ensures that where possible this is re-used, recycled or recovered (EUR- Lex, 2018b).

At the London level, the LCRN further indicates that

> a re-usable item is one where there is an economic value and a demand for it by another person, in its current form and purpose. It is likely to have a residual value, but the current owner has decided to write off this value and is thus prepared to send it to the bulky waste stream or, if known, to a re-use organisation (2008, p.1).

At the international-level, the OECD defines product re-use as 'involve[ing] the multiple use of a product in its original form, for its original purpose or for an alternative, with or without reconditioning.' (DEFRA, 2009b, p.3). The OECD is an international organisation, aimed at promoting policies that facilitate the economic and social well-being of people around the world. It provides a forum for governments to share experiences and seek solutions to common problems. It measures productivity and global flows of trade and investment and also sets international standards on a wide range of things, from agriculture and tax to the safety of chemicals (OECD, 2015).

At the UK level, DEFRA defines re-use as 'buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed).' (2013b, p.5).

9.1.3 Pro-environmental Studies

This section provides an example of the ways in which gathered pro-environmental behaviour studies (Table 9.2) are gathered for reviewing and analysing to develop the pro-environmental framework (Chapter 3).

Table 9.2: Pro-environmental studies

The Study	Location of Study	Target Audience	Size	Time period	Situation	Method	Findings	Conclusion
Cialdini, R.B., Reno, R.R., and Kallgren, C.A., 1990. A Focus Theory of Normative Conduct: Recycling the concept of Norms to Reduce Littering in Public Places. Journal of Personality and Social Psychology, 58(6), pp.1015-1026.	Parking garage	Visitors to university-affiliated hospital	139	5 days (Day hours)	For some parking heavily littered, for others parking was clean. College aged either dropped handbill or passed by it. Handbill tucked in car with a descriptive message "THIS IS AUTOMATIVE SAFETY WEEK. PLEASE DRIVE CAREFULLY"	Quantitative (SPSS) and Qualitative (Observation)	No effect of gender or age differences Littered more in the littered environment than in the clean	Procedures designed to shift attention within a setting to just one type of operative norm (either descriptive or injunctive) will generate behaviour change that is consistent only with that type of norm.
	Amusement park	Visitors	358	Pair of weekends (evening hrs)	Handbills given by students saying "DO NOT MISS TONIGHT'S SHOW". Path contained 0,1,2,4,8, or 16 handbills depending on the experimental condition	Quantitative (comparable) and Qualitative (Observation)	No effect of age, however men littered more than women	On the conceptual side, it appears that norms can be influential in directing 'human action'; however, in keeping with the spirit of prior criticism of normative explanations, it is necessary for norm theorists to be specific about both the type of norm thought to be acting in situation and about the condition under which it is likely to act.
							No significant difference was found between the 0 and 16 number of litter	Distinguishing between descriptive and injunctive norms is crucial because both types can exist simultaneously in a setting and can either congruent or contradictory implications for behaviour.
	Densely populated high rise women's dormitory	Residents	484	10 am to 4 pm	residents mailboxes with area either filled with litter, or no litter or 1 piece of litter	Qualitative (Observation)	More litter in fully littered environment. Less litter with a single piece of litter than clean environment	
	Parking garage	Visitors to university-affiliated hospital	127	6 days (late afternoon and early evening hrs)	For some parking heavily littered, for others parking was clean. College aged either dropped handbill or passed by it. In swept litter condition the confederate dropped the litter after passing by the pile of litter	Quantitative (SPSS) and Qualitative (Observation)	No effect of gender or age differences Handbill drop to unwept environment lead to rise in littering. However it reversed in the swept environment	Focus of attention is an important component. To predict the likelihood of norm consistent action requires, first, that one specify the type of norm said to be operating. Second, one must take into account the various conditions that would incline individuals

								to focus attention on or away from the norm.
	University	Undergraduate psychology student	95	a class session	List of 35 norms were given to the students. They were asked to scale them in 9 point scale whether its normative or not (1 EXTREMELY NORMATIVE, 9 NOT AT ALL NORMATIVE, 5 SOMEWHAT NORMATIVE)	Quantitative	Anti-littering norm messages were selected based on the result for other experiment (below)	Enduring cultural and dispositional conditions may also influence one's normative focus. What is normative in a society, in a setting, and within a person will, in each case, have demonstrable impact on action, but that the impact will be differential depending on whether the actor is focused on norms of culture, the situation, or the self
	University	Undergraduate psychology student	87	meeting	They were asked to compare the norms in relation to the littering. (1 IDENTICAL, 9 UNRELATED, 5 SOMEWHAT RELATED)	Quantitative	Men littered more	
	Parking	Patrons of municipal library	133 female and 126 male	-	Car had handbill reading one of the messages from above experiment related to anti-littering	Quantitative	those received direct anti-littering message littered less compared to others	
Dekker, R., Fleischmann, M., Laan, E.V.D., Nunen, A.E.E.V., Ruwaard, J.M.B., Wassenhove, L.N.V., 1997. Quantitative models for reverse logistics: A review. European Journal of Opreational Research. 103, pp. 1-17	-	-	-	-	-	Qualitative	Re-use motivation: ecological and economical	Reverse distribution is not symmetric to the forward, modifications and further research is needed. Also, influence of supply chain deserve further research
							form of re-use: direct re-use, repair, recycling and remanufacturing	Several unknown factors needs to be discovered for the supply and end market for used products and recovered ones respectively
							involved actors: collection, testing, reprocessing may be the member of forward channel of other specialised parties	Further studies needed in joint routing
								high uncertainty of timing, quality and quantity aspects are complex and need further investigation
Cleek, M.A., and Leonard, S.L, 1998. Can Corporate Codes of Ethics Influence Behavior? Journal of Business Ethics, 17, pp.619-630.	University	Business students (graduate and undergraduate)	150 (5 classes)	Beginning of regular class	They were asked to assume that they are working for a medium manufacturing company as Regional production manager	Quantitative (15 item questionnaire), frequency distributions, standard deviations and cross tabulations on demographic. T-test analysis, co relational analysis and regression	Areas under control to influence behavior are: managerial philosophy, managerial behavior, reinforcement system, recruitment procedure and characteristic of the job	Code of ethics do not effect ethical decision makings
					code of ethics were given to half of the students and remaining did not get it, they only had general information that company had a code			Codes are just one way to communicate culture
					Questions asked covered several ethical situations: coercion and control, conflict of interest, environmental concerns,			code did not specify any innovative idea for improvement and were not oriented towards social responsibility

					company liability and personal liability. Also demographic information	analysis for hypothesis		
					They were asked to make either choices: ethical, non ethical or to not make a decision			Ferrell and Gardiner (1991), provided 6 suggestions to improve ethical behavior: offer training programme, well developed structure and system of checks and balance, penalties for unethical behavior, recognize how co-workers and supervisors behavior can influence others, develop an ethic committee and develop code of ethics
Kirk, D. 1998. Attitudes to environmental management held by a group of hotel managers in Edinburgh. International Journal of Hospitality Management, 17, pp. 33-47.	Edinburgh	General manager (hotels)	85	1994/1995	First part of question was to know about the hotel (size, ownership, membership etc)	Quantitative (Postal questionnaire, SPSS)	Only 19 hotels claimed to have written environmental policy	Manager of 3 to 5 star hotel have more positive attitude towards public relations than from the 0 to 2 star
					Second part to know about the policy in place.			
					The 3rd section was to find the attitude of manager regarding profitability, customer service, employee satisfaction, relation with community, marketing advantage		Improved public relations received more positive attitude than any other	Managers from consortium/chain hotels seems to feel more benefit from improved customer and employee benefit
					69% of hotel were independent remain 26% were Consortium/chain			
					Based on room size hotels were divided into 2 grps (more than 20 rooms and less than 20)		improvement in profitability was ranked relatively low	There was no association between the written policy and size of hotel
Kanter, R.M, 1999. From spare change to real change: The social sector as Beta Site for Business Innovation. Harvard: Harvard Business Publishing.	Bell Atlantic's, New Jersey	Inner city students and teachers	135	1991	In addition to installing computer at school company gave computers at home as well	Qualitative	refined its goal for video in demand and a new market of distance learning	Six characteristics of making PPP success: A clear business agenda, strong partners committed to change, investment by both parties, rootedness in the user community, links to other organisation, long-term commitment to sustain and replicate the solution
	IBM, Reinventing education programme	Schools	21 US sites and 4 other countries	1994	Created tool to connect parents to teachers digitally and also see their children work from home		Parents could compare the standards with the district academic standards	
	Marriot International, pioneering training programme	Public	13 US cities	1991	Marriot grantee participants with job offer after completion of programme		It created new jobs in poor communities	
	BankBoston	Inner city	-	1990	First community bank		It provided high-quality financial services for disadvantaged minorities and inner city	

							inhabitants which revitalised neighbourhood	
							Quality assurance include: conditioning, cleaning, disassembly and reassembly	Need to develop the cost/revenue calculation methods
							Obstacles in disassembly is the technology and logistics requirement	It seems to be higher value for repair, re-use and maintenance sector
Feldmann, K., Reinhart, G., Seliger, G., Westkamper, E., 1999. Integrated Development of Assembly and Disassembly. Scientific Technical Committees,Germany. Germany: CIRP, 48(2), pp.557-565	University of Nijmegen	Undergraduates	75	-	Primed with the category of elderly or not	Quantitative	Participants with lot of previous elderly contact recalled less as compared to participants with less contact	Contact leads to development of stereotypes
					2 experiments one investigated social life and other investigated word recognition			More past contact leads to behavioural changes during present
					1st task was to access how much time they spend with the elderly (1 very little and 9 very much)			
					2nd task 30 letter strings appeared on screen some existing words and some nonsense words, they were asked to indicate as fast as possible whether string was an existing word or not			
					3rd task was to recall and write words shown on screen in 3 min			The critical determinant for changing behavior is associative strength
			40	-	They were either primed with the stereotype of elderly or not		Average recollection was better than ist experiment	
					It was same with the above except they showed the words twice to make it easier for students to recall			
Dijksterhuis, Ap., Aarts, H., Bargh, J.A., and Knippenberg, Ad.V., 2000. On the Relation netween Associative Strength and Automatic Behaviour. Journal of Experimental Social Psychology, 36, pp.531-544.	Arizona state University	Psychology students	296 (138 women and 158 men)	-	Stairwell was pre-littered	Quantitative (SPSS and log linear)	Men littered more than women (43% vs. 24%)	Norm have a potent impact on behavior but only to the extent when norm is focal or salient to the behavior
					Passages read with different norms (high related to anti-littering to low related)			Making injunctive norm salient may be effective for suppressing counter normative actions
					Participants were presented with a passage reading in which one of the 4 topics was related to anti-littering norm		participants were less inclined to litter on passage that read high related anti-littering norm	
					After an experiment participants were given paper towel to clean their hand and were asked to leave by the stair			

Kallgren, C.A., Reno, R.R., and Cialdini, R.B., 2000. A focus Theory of Normative conduct: When Norms Do and Do not Affect Behaviour. Society for Personality and Social Psychology, 26(8), pp.1002-1012.	Public urban hospital	Visitors (returning to car parking)	149 (98 women and 51 men)	daylight hrs	2 conditions, one in which a collage aged confederate picked up the litter (injunctive) while participant were walking back to the car park and other where there was no pickup	Qualitative (Observation)	No effect of gender	Personal norm in itself is not effective enough to make it an action, the internal and external focus of attention moderates the degree to which personal norm is likely to guide such action
					when participants reached their cars they were encountered with 1 or 2 handbills on their car with message saying "This is automotive safety week. Please drive carefully"		Participants who were encountered with the injunctive message of confederate picking up the litter were less willing to violate the norm especially in the condition when size of violation was substantial (2 bills)	
					parking environment was left in its natural way with few litter			Norms although in place not necessarily would be effective as situational factors may draw attention or distract attention from relevant norm
	Arizona state University	Psychology students	107 (37 women and 43 men)	beginning of the semester	10 item questionnaire that assessed the personal norms against littering	Quantitative (log linear)	When participants action was focused away from themselves even participants with strong personal norm against littering was not predictive of relevant behavior. However, in condition when participants focused those with strong personal norm towards anti-littering were predictive	
Bargh, J.A., and Ferguson, M.J., 2000. Beyond Behaviorism: On the Automaticity of Higher Mental Processes. Psychological Bulletin, 126(6), pp.925-945.	-	-	-	-	-	Qualitative	Social behavior in the external environment often if not usually access their corresponding mental representation in an immediate and direct manner, without conscious process	The mimicry within the partners is either to achieve a goal or to establish a rapport or friendship
								Situation can automatically activate norms that then guide intergroup behavior without conscious involvement
							Loyalty primed people show more in-group favorism in resource allocation than equality primed people	To attain an account of goal directed behavior it's important that internal goal structure is capable of autonomous operation and also can access incoming information about the changing environment
								Habits are not behavior linked to the environment, but are behavior linked to higher goal. When goal is activated the habitual plan for carrying out that goal is automatically activated
Aarts, H., and Dijksterhuis, Ap., 2000. Habits as Knowledge Structures:	University of Eindhoven, Dutch	Students (owned bicycles)	54	-	randomly assigned to 2 conditions a goal priming and non goal priming	Quantitative (ANOVA)	Habitual bicycle readers who were primed with travel goals responded faster as compared to others	Activation of travel goal is necessary to revel the mental accessibility of habitual travel behavior
					3 computer tasks was given to all the students. The first			

Automaticity in Goal Directed Behaviour. Journal of Personality and Social Psychology, 78(1), pp.53-63.					task acted as a manipulation phase for goal priming, the 2nd task was to study the effect of goal priming and habit on speed of responding to the target trips and the 3rd was to access the habit strength			
					In 1st task half of the students were given 5 sentences to read and were asked to press the button as soon as they are finished reading. It was to check their speed and the sentences described 5 different travel goals (primed)			
					All students both primed and non primed started with the 2nd task where they had to study all sorts of locations and travel behaviour. They were given 40 location transport trials and 8 modes of transports			
					task 3 participants were given 10 location and were asked to tell how many times they have travelled there with bikes in last 2 weeks			It is worthwhile to speculate how planning can help to break harmful or undesirable habits
			53		assigned with 2 conditions a related planning condition and unrelated planning condition		planning facilitated the speed of non habitual participants but this was not the case for non habitual	
					3 computer-based experiments on planning task, an association task and the habit measure			
					Half of the participants were asked to provide plan to repair the flat tire. They were given a handbook with sheets listing 5 major sub goals of repairing flat tires. They were requested to write when ,where, and how they would accomplish it			
			89		Measure habit strength		Travel location did not influence the speed of responding to the habitual pattern mode, location is not related to cycling per se	
					3 consecutive computer-based task: goal activation, verb verification and habit measure. They were also told that 1 of the task would			

					be executed at home in which they have to report later			
					half of the participants were given list of task unrelated to the travel behavior others were given with the 5 travel goals used in previous studies			
					2nd task was to press button with yes or no by saying the 2nd word provided on screen is verb or not		Participants who formed implementation intention showed enhanced associative strength between travel goal and mode just as habitual participants	
					after verb verification exercise participants reported their frequency estimates of bicycle use across 10 travel destination			
Loe, T.W., Ferrell, L., and Mansfield, P., 2000. A review of Empirical Studies Assessing Ethical Decision Making in Business. Journal of Business Ethics. 25, pp. 185-204.	-	-	-	1961-1996	Theoretical models of organisation ethical decision making. The Jones model (1991) is based on the Rest's (1986) 4 stage process: recognising moral issues, making moral judgement, establishing moral intent and engaging in moral behavior	Qualitative	Ethical choices are not just individual decisions but are based on the social learning in the organisation	Even though gender is one of the most researched area the results are mixed and inconclusive
							role of gender in decision making has received significant examination	
							Education and work experience results are also mixed, some studies found education to have no relation with the ethical decision makings, however some shows higher education levels are associated with greater ethical sensitivity.	
					Empirical study of ethical decision making. It includes the studies that directly examine the hypotheses set forth by ethical decision-making models and studies identifying the moderators of ethical decision making within the organisation		positive correlation between age and decision making	Understanding why and how individuals and groups make ethical decisions in a business conduct should improve the ethical decisions made in organisational context
							codes of ethics influence the decision making and increase the level of awareness	
							Peers and significant people in organisation do effect the ethical decision of their co-workers	
Cashore, B., and Vestinsky, I., 2000. Policy network and firm behaviors: Governance systems and firm responses to external demands for sustainable forest	British columbia, Alberta and Alabama	Forest organisations	3	-	neo institutional theory and its modifications: coercive isomorphism refer to changes resulting from regulations, mimetic isomorphism refers to changes by mimicking others and normative isomorphism changes through the pressure from business own association or	Qualitative	From business perspective, business dominates satet and other actors in clientele pluralism, business dominates other actors except state in concertation. Business is in same footing as other actors in pressure pluralism and corporatist. Business is dominated by state in state directed as other actors	Porter and van der Linde's (1995), found that firm level innovation is encouraged when business participate in developing regulatory policies

management. Policy Sciences, 33, pp. 1-30.					from other professional association			
					Oliver (1991), turned from neo institutional theory to resource dependency theory as it focuses on the individual firms and the short changes that occurs due to external pressure			
					literature has developed a set of policy network categories that have been used to help explain the role of societal interest, the nature of policy making process and ingredient in explaining policy change and stability			
					Coleman and Skogstand (1990) identified 5 types of policy network: pressure pluralism, clientele pluralism, corporatist, concentration and state directed			
					Pressure pluralism: business interest must share their influence in policy making with non business interest. Groups are involved in sub government as 'policy advocates' rather than 'policy participants'			
					Clientele pluralism: business interest are 'policy participants' and they are prohibited to make any policy changes			
					Corporatist: the societal interest groups such as business, labour, environmental and other are provided with the opportunity to work and provide information for policy change, however state retains its right to make ultimate policy choice			Frim may be less likely to respond to the environmental group pressure where the regulatory burden is less. On the other hand, if regulatory body announce review of any environmental factor (pollution etc) firm may take the opposite approach by inviting state actors to collaborate to devise firm policy. Firms try to accommodate and give importance to state officials interest when they know decisions may affect firm operation
					Concentration: it is similar to the clientele pluralism, just that state is independent from business interest and work with business to develop the mutually accepted policy choices			

					State directed: all powers under state to control the policy making process and impose the solutions			
Foster Jr, S.T., Sampson, S.E., and Dunn, S.C., 2000. The impact of customer contact on environmental initiatives for service firms. International Journal of Operations and ProductionManagement. 20(2), pp. 187-203	3 states from rocky mountains (Idaho, Utha, Wyoming)	firms (manager/president responsible to deal with environmental issues	6 (2 firms from recreation sector)	-	major questions asked: environmental action that firm takes, motivating factor to take those actions, extent to which customers acted as trigger to take those actions, customer awareness about the action, and customer likelihood towards the action	Qualitative	there are lots of commonality between the action of service and manufacturing firm	studies done on manufacturing firms could be applied to service firm
Beullens, P., Fleischmann, M., Ruwaard, J.M.B., Wassenhove, L.N.V., 2001. The impact of product recovery on logistics network design. Production and Operations Management. 10(2), pp. 156-173.					there are 2 markets: the disposer and the re-use (supply and demand)		essential elements required is the separation and inspection stage	Separate network can be easily dealt and organised, there could be a dedicated unit to deal with reverse logistics. Cost of coordination and restructuring tend to be lower
					Supply and demand depends on the availability and quality due to which separation and inspection becomes the important issue			
Mohr, L.A, Webb, D.J., and Harris, K.E. 2001, Do Consumer Expect Comapnies to be Socially Responsible? The impact of Corporate Social Responsibility on Buying Behavior. The Journal of Consumer Affairs. 35(1), pp.45-72.	Major metropolitan area (gyms, public parks, city squares, Laundromats, bars, cafes, restaurants, retirement homes, book stores, university quadrangles, offices, barber	People in street	48	45 minutes to an hour	Multidimensional concept: according to Carroll (1991), CSR include 4 types of responsibilities: economic, legal, ethical and philanthropic	Qualitative (in-depth interviews, semi structured interviews)	General attitude towards business: respondents were positive towards the business only one-fourth rated as negative	Respondents are positive about the organisations behavior towards CSR, however they also believe that company see CSR as their own self benefit.
							Level of CSR respondents expect: very less expressed that firms are only responsible for stakeholders and make as much as profit. Over half of the respondents replied as moderately high or high level	
							Attitude towards socially responsible firm: majority expressed positive attitude	Majority of respondents do not care about the SRCB, they very occasionally make purchasing decision based on principles
					Social marketing concept: Kotler (1991), CSR is doing business in a way that improves consumer and society's well being		Attributions of the firm's motives for being socially responsible: around 1/3rd see CSR as self interested behavior, however strong majority attribute at least some of the motivations to helping others	

	shops and post offices						Impact of CSR on consumer behavior: approximately 1/3rd of the respondents are precontemplors that is they are unaware of any need of CSR. One-quarter occasionally think about CSR also known as contemporise	For policy makers it's very important to educate public regarding the information available for social responsibility records
Payne, D.M, and Raiborn, C.A., 2001. Sustainable Development: The Ethics Support the Economics. Journal of Business Ethics. 32, p.157-168.	-	-	-	-	Businesses cannot do: pass laws or treaties to protect environment, enact land reforms, or control population. Force consumer to act sustainably, produce scientific knowledge, leave profitability just for prioritising environment	-	Business needs to educate others	Communication and education will help to change the attitude
					Businesses can do: influence passage of laws through lobbying and other efforts, influence consumer behavior, design sustainable products, pursue sustainable development along with profitability		business needs to communicate with stakeholders about avoiding short-term profitability and moving towards long-term profitability	vanguard needs to be the leaders to initiate sustainable development among business sector
					Hierarchy of ethical behavior suggested by Raiborn and Payne (1990) consist of 4 degrees of achievement: basic, currently attainable, practical and theoretical.			Those businesses who create most environmental problems should initiate
					A Dow chemical vice president (1998) suggested 6 ways to achieve sustainability: foster company culture, initiate voluntary performance improvements, initiate eco-efficiency concepts, seek opportunities for sustainable growth, invest in creativity, innovation and technology			those businesses whose stakeholders are keen to shift towards sustainable practice should initiate
Lance, M., 2001. What do we mean by corporate social responsibility. Corporate Governance. 1(2), pp. 16-22.	-	-	-	-	stakeholder theories (primary stakeholders and secondary stakeholders), social contracts theory (micro social contracts and macro social contracts), legitimacy theory (pragmatic, moral and cognitive)	-	-	-
Kong, N., Salzmann, O., Steger, U., and	New product developme	-	-	1999	Joint agreement resulted in: a potential market, translating health into	Qualitative (case studies)	AEI helped the company to identify environmental preferences, provided opportunity to change	educating shareholders and using their power to bring change

Somers, A.I., 2002. Moving Business/Industry Towards Sustainable Consumption: The Role of NGOs. European Managment Journal.20(2), pp. 109-127.	nt: SC Johnson (private) and AIE (NGO)			-	environmental focus (eliminated allergens and chemical treatment, extended product life through reusability), avoiding cost, breaking down the green wall and a new tool to measure product environmental performance		consumption behavior, new strategy for marketing	Confronting to innovative partnerships Creating demand from supply side
	Sustainable housing: Bedding, Bed ZED, England				Stakeholders: local government, architects and engineers and Peabody trust		used environmental technologies, achieved social innovations, creative use of brown fields. Achieving recycling target of 80% by 2005, Implemented sustainable transport system, exceeded target in home EE.	the level of direct consumer contact and involvement upfront thinking broad stakeholder involvement
Aarts, H., Dijksterhuis, Ap., and Custers, R., 2003a. Automatic normative behaviour in environments: The moderationg role of conformity in activation situational norms. Social Cognition, 21(6), pp.447-464.	Dutch University	Undergraduate students	71	-	Randomly assigned to either "goal condition" or "no goal condition"	Quantitative (ANOVA)	participants with strong normative belief and also participated in the goal oriented task represented normative behavior (silently in library)	People who are more inclined to conform social norms may have more past experience of enacting in the normative way
					Task on computer			
					1st task was picture task: all students were shown a picture of library, half of them were taken to one (goal) after that and other half were asked to scrutinize the picture (no goal)			Priming of conformity caused participants to automatically think and apply behavioural norm to the situation in hand
					2nd task was lexical decision task: they were presented with 12 meaningful words and 12 nonsense words and were asked to press yea or no bottom by identifying them as correct or incorrect ASAP. 4 of the existing words were normative (related to library situation) other 8 were general.			
					In 3rd task they were asked 3 questions and were asked to number the answers from 1 (not at all) to 10 (very much). The questions were related to the social norms.			Priming conformity caused the participants to access the representations of the environment related behavior norm upon the goal to visit the environment
			50		Randomly assigned to either "conformity prime" or "no conformity prime" conditions		-	
					Task on computer			automatic effect of conformity on normative behavior in social environment can be directly emerge from mere activation of the norm
					1st task was to read the words ASAP, total of 16 words. Half were provided with the 6 conformity			

					related words and other half were provided with 6 non conformity words			
					2nd task they were exposed to a picture of library.			
					3rd session was similar to the previous experiment (lexical decision task)			
Cialdini, R.B., 2003. Crafting Normative Messages to Protect the Environment. Association for Psychological Science, 12, pp.105-109.	Arizona's petrified forest national park	Visitors	-	5 consecutive weekends	approximately one ton of wood per month is theft by the visitors	Qualitative (Observation)	the descriptive message lead to more theft than descriptive message	Message that focus on injunctive norm are more powerful than descriptive norm in the situation characterized by unfortunate level of socially disapproved conduct
					Visitors learn of thievery from prominently place signage "Tour heritage is being vandalized every day by theft looses of petrified wood of 14 tons a year, mostly a small piece at a time". (backfiring descriptive message)			
					at entrance of each path they provided signage emphasising either injunctive norm or descriptive norm			
					Descriptive sign said "many past visitors have removed petrified wood from the park, changing the natural sate of petrified forest". With a picture of 3 visitors taking wood			Descriptive and injunctive norms should be made aligned to work together rather than in competition to one another
					Injunctive sign said "Please do not remove the petrified wood from the park in order to preserve the natural state of the petrified forest". With a picture of a lone visitor stealing a piece of wood , with a red circle and bar symbol superimposed over his head			
	Arizona community	Public		-	Created 3 PSAs design to increase recycling. Each portrayed a scene in which either individual is engaged in recycling, spoke approving of it or spoke in disrespectful way about the single individual who failed to recycle	Qualitative	25.35% of recycling advantage was recorded over the place where PSAs were not played	Descriptive norms do not need cognitive analysis however injunctive norm does need that because it is based in an understanding of the moral rules of society
					PSAs were played in the local TV and radio		However, it was not evident that the result was only due to the PSAs	

							or not so another study was carried out	
	College	students			Viewed 3 PSAs		Participants believed that recycling was prevalent and motivated to recycle more in the future	
Rimal, R.V., and Real, K., 2003. Understanding the influence of Perceived Norms on Behaviour. Communication Theory, 13(2), pp.184-203.	Texas A and M university	Undergraduate students (department of speech and communication)	353 (72% female)	-	Average age varied from 16 to 19 years	Quantitative (hierarchical regression equation)	2 most important variables to understand the consumption pattern are communication and perceived benefits to themselves	individuals to not make decisions blindly and copy things they analyse and think about the benefits before making any decision
					computer-based task			
					questions were related to students weekend habits, entertainment, activities embedded were the alcohol related questions			
					to minimise the questions the groups were made at home, a social party and restaurant or bar. There were 9 questions about the consumption		students who regularly consume alcohol thinks themselves to be the member of special group	
					Descriptive norm: students were asked to estimate the percentage of their fellows consumed no alcohol		students who perceived that society disapproves of alcohol and found that their peers drinks, they were likely to drink more as well	As Brehm's (1966) says psychological reactance (boomerang effect), people tend to do thinks when they feel freedom are threatened
					communication pattern: they were asked in past 2 weeks how often they spoke about the drinking alcohol			
					group identity: based on the similarity		students who consume alcohol probably do so in defiance of societal disapproval	
					injunctive norms: social approval, benefit to oneself and benefit to others			
Aarts, H., and Dijksterhuis, Ap., 2003b. The Silence of the Library: Environment, Situational Norm, and Social Behaviour. Journal of Personality and Social Psychology,84(1), pp.18-28.	University	undergraduate students	66, 62	-	exposed to the picture of library and exclusive restaurant respectively	Quantitative (multiple regression)	Only subjective norm shared unique variance in the behavior in both environments	normative behavior can be automatically activated without direct experiences with the situational norm
					they were asked how often they went to the respective environment in last 2 weeks (1 as never to 10 as very often)		behaving silently in the library and exclusive restaurant is a normative	
			50		they were given either of 3 conditions: goal control prime, no goal library prime and goal library prime	Quantitative (ANOVA)	library picture enhanced the speed of answering the normative behavior words but only when participants had goal to visit the library	
					computer-based task			
					2/3rd of the class were shown a picture of library and were told that they will visit the location later (goal library prime)			
					some of them were shown the picture of railway station (goal control prime)			

					1/3rd were shown the picture of library but were not taken later were just asked to scrutinize (no goal library prime)		goal of doing things in library heightens the social norm of being silent	situational norms are general rules and standards that are understood by members of society and guide behavior without the force of law
					2nd task was lexical decision task: they were presented with 12 meaningful words and 12 nonsense words and were asked to press yea or no bottom by identifying them as correct or incorrect ASAP. 4 of the existing words were normative (related to library situation) other 8 were general.			
			69		exposed to 4 task: a priming task, word pronunciation, the affect arousal scale and a measure of past direct experience		Male voice were louder than female	situational norm can automatically elicit the behavior by activating the goal to visit the environment
					back to back task were conducted, first they were shown a picture of library, than they had to pronounce 10 words coming in the computer, than they were asked about the mood (bad-good, sad-happy, displeased-pleased. Then were asked about the arousal (calm-excited, tired-energetic, and sedate-aroused)		participants voice in goal library condition were less loud than in goal control condition and no goal library condition	
							there are no significant difference in no goal library and goal controlled condition	mere perception of environment does not facilitate normative behavior
			42	2 months	assigned with either goal control or goal restaurant prime condition		restaurant prime affected the actual performance regardless of the direct experience with the environment and associative normative behavior in the past	
					pictures and after that the picture of behavior were displayed and they were asked to select ASAP the appropriate behavior related to the environment			
					Some pictures were with the actions that are socially unacceptable eg parking litter. Other pictures were of socially accepted behavior eg exclusive restaurant well mannered			
					After 1 month they were requested to come again for another set of experiment in which they were either			

					exposed to the goal controlled [picture (railway station) or primed goal picture (restaurant). They were told that they will be taken to the environment			
					after that they were asked to sit in a clean and tidy round table and were given round crumbled biscuits that make noise and were asked to eat, hidden video camera were installed to take their manner. After that they were asked how often they had visited to the exclusive restaurant in the last month			
Dewhurst, H., and Thomas, R., 2003. Encouraging Sustainable Business Practices in a Non-regulatory Environment: A Case Study of Small Tourism Frims in a UK National Park. Journal of sustainable tourism. 11(5), pp.383-403.	Yorkshire Dales National Park, UK	owner manager	54 (93% were micro enterprises)	-	theory of reasoned behavior is applied as it is recognised that the macro-environmental pressure for change, dynamics of immediate business environment, personal relationship, and motivation will combine to form a set of normative belief to change the business behavior	Qualitative (structured interview, semi structured and in-depth)	3 quarter claimed to take actions recommended in good practice guides, 80% claimed to have agreement with the principles of sustainable tourism presented to them	personal motivations, lifestyle goals are really important in determining attitudes and behavior towards sustainability
					research was divided into 2 stages		the action taken were adhoc and even most active firms identified 6 different actions taken to address sustainability	
					based on the findings the firms were divided into 3 areas: unconvinced minor participants (UC), Antigen pragmatists (AP) and committed Actors (CA)		61% positive and acting, 19% positive and inactive, 9% negative and inactive and 11% were negative but active	it still need to be known that how beliefs are shaped and why some firms have more influences on behavior than others
					UC: they believed that other businesses also concern more about trade and less about the environment		attitude towards sustainable behavior was most prominent in women	
					AP: they believed that the global issues are not in the hand of individual behavior and priorities the commercial concern. They tend to value the facts and scientific experts		elements in contextual, personal and sect oral environment in which firms were working played part in influencing attitudes and behaviour	individuals belief and values play an important role in shaping the attitude towards sustainability
					CA: everyone has a personal responsibility to conserve resources and minimize environmental damage. These values are shaped by		majority of respondents were convinced that environmentally sound business practice can bring economic benefit and best way to encourage is to convince others	

					childhood experience and through personal values. They are identified as non economic motives businesses.			
Kagan, R.A., Thornton, D., and Gunningham, N., 2003. Expalining Corporate Environmental Performance: How Does Regulation matter? Journal of Law and Society Association. 37(1), pp.51-90.	British Columbia, Canada, Australia, New Zealand, Washington and Georgia	mill managers and environmental managers	14 (pulp and paper manufacturing)	1998-1999	focus on: regulatory regimes, economic variables, political and social pressures and corporate environmental management and attitudes	Qualitative (onsite, semi structured interviews) and Quantitative	Differences in regulating pollution control due to different regulatory regime. US tend to apply strict and prescriptive regulation, where as Canada, New Zealand and Australia employ cooperative and negotiated mode of enforcement	external pressure could be through the adverse publicity about the unsustainable behavior of the organisations
							mills with larger sales, profit and rising stock will have better environmental performance compared to mills with low sales, profit	environmental groups not only enforce to have social licence but also influence the terms of economic licence
					questions were to know: environmental management, pollution control, control system, challenges, approach to problems, regulators and environmental activist relations		along with the regulatory licence they also need to take care about the social licence	different social licences tend to act powerfully in influencing differences in environmental outcomes
							true believers and environmental activist tend to perform in environmental friendly way and also want to keep good relations with the environmental activist and regulators which helps them to get more flexibility in regulatory permit	limits on licences are unclear and ambiguous that provides a considerable scope for the different environmental management to interpret in different ways
					constructed 5 types: environmental laggards, reluctant compliers, committed compliers, environmental strategist and true believers		There is a strong relationship between the management style and the environmental outcomes. Firms described as committed compliers had better control on effluents than reluctant compliers. But environmental strategist did even better than them and true believers outperformed on most measures	Regulations are important however the social licences and corporate environment management appear to be the most powerful factor that makes firms go further beyond the compliance. Economic pressure limit how far even the most environmentally committed firm can leap ahead of its competitors
Bhattacharya, S., Savaskan, R.C., Wassenhove, L.N.V., 2004. Closed-Loop Supply Chain Models with Product Remanufacturing. Management Science. 50 (2), pp. 239-252							M: manufacturer is at disadvantage in coordinating pricing and used product return rate as it faces double marginalisation in forward channel	
							3P: it is the least preferred option as payment made to 3P is a direct cost to manufacturer for which they do not even receive incentives which reduce profitability	
Jarratt, D. 2004. Conceptualizing a	-	-	-	-	-	-	Relationship behavioural capability: it involves	-

relationship management capability. Marketing Theory. 4, pp. 287-309.							collaboration, flexibility, relationship management; learning involves development of new knowledge that has potential to influence behavior.	
							Collaboration is the reflection of interconnectedness in relationship. It leads to cooperation that comes through work experience, however may be enhanced through systems, processes and technologies that support interaction	
							flexibility is exhibited through willingness and ability to modify	
Thomas, T., Schermerhorn, J.R., and Dienhart, J.W., 2004. Strategic leadership of ehtical behavior in business. Academy of Management Executive. 18(2), pp. 56-66.	-	-	-	-	John Kotter talks about the transformational change; create a sense of urgency, take actions, anchor changes in organisation culture	-	awareness of the unethical behavior could help it to avoided going that root	leadership works on integrity and should not ignore the importance of compliance
					Cost of ethical failure is divided into 3 levels		role models also play an important role in influencing behavior	ethic messages must be supported by positive messages
					1st level: minimal cost of fines and penalties		leaders in the company can reinforce ethics mindfulness by strengthening and communication ethics values throughout an organisation	
					2nd level involves administrative and audit, legal and investigation, remedial education, corrective actions and government oversight		cultural ethics could also bring a difference	ethical performances should be recorded and rewarded
					3rd level is the most damaging when organisations reputation is on stake it involves: customer defections, loss of reputation, employee cynicism, lost employee morale, employee turnover, govt. Cynicism and govt. Regulation		In organisation its group believes rather than personal belief	
Guadagno, R., and Cialdini, R.B., 2005. Online persuation and compliance: social influence on the internat and beyond. In The social net: Understanding human behavior	-	-	-	-	2 types of influence: compliance and persuasion. Former imply change in behavior resulting from request and later is from messages	Qualitative	participants in online interaction reported higher level of private self-awareness than face to face	Message through computer mediation is more likely to be centrally processed
					Persuasion processes: systematic or central route (computer-based) and heuristic or peripheral route (face to face)			

in cyberspace. The social net: pp.91-113.					Systematic process or central route persuasion: influence those who are interested and have knowledge as it involves quality of argument.			
					Heuristic processing or peripheral route persuasion: influence those who have minimal or no knowledge as it involves quantity of persuasive argument			
					face to face condition: participants wrote a short paragraph on an assigned topic and completed 2 decision making problems with partners. Finally read the persuasive message in the paper			when persuasive attempt is non interactive (computer-based), participants are engaged in message focused approach which makes systematic processing more likely
					Computer condition: typed the paragraph in computer and solved the decision making problem via computer. Finally read the persuasive communication on the computer			
					both medium participants after finishing their tasks filled out the attitude measure and measure of private and public self-awareness			
				2001 (Duthler)	participants were asked to read persuasive statements that varied in argument strength, personal relevance and the complexity of peripheral cues associated with the message		participants had more positive attitude towards the comprehensive exam after reading the strong arguments	
					some participants read strong arguments endorsing comprehensive exams as new regulations and some read poorly reasoned arguments advocating the same			female participants tend to create a bonding with the agent during communication while male maintain their independence
					personal relevance was manipulated by telling that if approved the new graduation would apply to them, thereby making topic highly relevant to them and participants in low relevant			

					were told that if approved the exam would not be implemented for 10 years			
					Complexity of peripheral cues was differentiated in the form of graphics. Those with low complexity were made black and white and those with high complexity had several colour graphics			
				2002	same sex influence agent tend to persuade participants either via face to face of anonymous email discussion		Strong argument was more persuasive than weak. Also female participants via email were less persuasive than face to face however there was no communication mode difference for the male participants	
					through strong or weak argument agent was trying to pursue participant that comprehensive exam as a new graduation requirement was a good idea			More participants felt a sense of merged identity more they are likely to change their attitude to match the confederate
					follow-up of the above experiment, influence agent this time presented only strong, well reasoned argument to half of the participants through face to face interactions and others via email		female participants via face to face interaction did not had any impact however those females who interacted via computer reported less positivity towards the message. For male who participated in the prior face to face experiment exhibited less opinion than men in all other conditions	
				2003	Similar condition as above except prior to the interaction they were provided a feedback to their similarity with the others. This false feedback was intended to induce a sense of oneness and interconnected identity		Regardless of the communication the higher level of oneness leads to the greater positivity.	
					Feedbacks were in 3 oneness manipulations: high, low and none. In high condition they were told that they are so similar to the influence agent that they could be siblings. With low were told that they are so dissimilar that it's very difficult to find people with such dissimilarity		In the case of low level of oneness male see the agent as a competitor and reject the argument when talking face to face however via email they were more open as commutative social cues was not salient.	along with this study there are few other studies by Guegen and Jacob (2001), Markey *et al.* (2001) and Perrona *et al.* (2003) that foot in door technique is effective in the computer-based communication as it functions through an individual internal consistency rather than the salience of influence agent
					Only strong arguments were used and some of the participants were not given no oneness information			

				2002 (Guegen)	Commitment and consistency based influence in cyberspace: the 'foot in door' technique. First influence agent ask for something of minor commitment. Than in relation to that they go with some larger request.		76% of the participants who had complied with the first request also filled the second one	
					University student asked participants about how to save a document in the rich text format, than as a second request the student asked them to fill out 40 item survey on their dietary habits.			
Wenzel, M., 2005. Misperceptions of social norms about tax compliance: From theroy of intervention. Journal of Economic Psychology, 26, pp.862-883.	University in Australia	first year psychology students	64 (44 female and 20 male)	-	they were asked several questions regarding the taxation	Quantitative	students believed that one should be more honest in one's tax dealing, more than they thought others believed it	intervention led participants to realise that they underestimated other people's tax ethics and also they reported that they would be more honest in tax scenario
					After you have entered the workforce and are then earning taxable income: what would you think and do? Along with this there were 6 more questions to judge their personal belief and honesty (with 1 not at all and 7 very much)			
					Then another exercise with question asking what do you think other students would do?		participants perceived social norm to be more positive in the second experiment than in first	in both studies the fist experiment showed the self other discrepancy
					in 2 weeks time those students were provided with the feedback and were asked different question		intervention successfully increased the perception that most other people think one should be honest in one's tax return	people generally have misperception to social injunctive norms of taxpaying. They themselves believe to be honest in tax paying but have a plural ignorance about others that they tend to do tax cheating
					they were told that they need to imagine that they are preparing their tax return and they realised that they had some deductions to claim		respondents in the normative feedback condition were less likely to make false deduction claims than those in control condition	
					How likely is it that you would claim deductions on some or all of these expenses? How much of these expenses would you claim as work related? (1 not at all, 7 all of them)			
	Australia	tax payers	1500 (48.9% male and	3rd week of August	Condition: they are self prepares have lodged their 1999 tax return with a salary of more than 0. Had no audit		intervention had no impact on WRE return	this misperception could lead to change in behavior towards misperceived norms. To avoided the situation these

			51.1% female)		activity in 1998-99. had not yet lodged their 2000 tax return			experiments were designed to make participants realise about the self other discrepancy
					randomly allocated with 3 conditioned: feedback, survey only and control condition		tax payers who were provided with the feedback about inconsistency between their own tax ethics and those attributed to other people they claimed less non WRE deductions compared to those who were not provided with feedback	
					feedback grp received feedback after the survey about the finding concerning injunctive norm			intervention could lead to reduce tax cheating and increase tax compliance
					questionnaire included similar measures of personal and social injunctive norms as in study 1			one way written communication could be an effective way for mass persuasion in the field of tax compliance, environmental behavior, health so on
					feedback grp were send with the results which showed that most people actually agree honesty is important when paying ones tax			
					1 month later researcher received the records from ATO with dignified anonymous data from the participants of current and previous tax returns			
Condon, D., Medley, K.E., Zhou, Y., 2006. Shared Learning: Feminist Student Research on Household Re-use behaviour. Journal of Geography, 105 (5), pp. 209-215.	in their homes at Ohio, USA and Beijing, China	Women professors	10 Universities	2000	the top most priority in waste hierarchy according to US EPA (1997) is source reduction which implies re-use as it delays the item to become waste and avoided purchase of new products	Qualitative (in-depth semi structured interviews)	2 main ways in which item enters and leaves home: Economic cycle between home and second-hand market, Non economic cycle as gifts	Strengthen both cycles should increase participation in household re-use
					earlier studies shows that the household waste management practice is gender biased			
					interviews went for almost an hour each and were recorded on tape with pseudonym (nick name)			
Kumar, S., Malegeant, P. 2006. Strategic alliance in a closed-loop supply chain, a case manufacturer and eco-non-profit organization. Technovation, 26, pp. 1127-1135					Activities involved in close loop supply chain are: Collection, Separation, Reprocessing, redistribution			
					Collection: product acquisition, transport, store			
					Separation: testing, disassembly, sort, shred, store			
					Reprocessing: disassembly, shred, repair, replacements			
					redistribution: sales, transport and store		Startegic alliance creates value for manufacturer by: Creating green	

					Nike an example, Nash theory of game, could apply 3 options they are : win-lose strategy, lose-win strategy and win-win strategy		image, Generating more profit, Focus on company core business	
					win-lose strategy: Company focus on remanufacturing and consumer needs to deliver the shoes			
					lose-win strategy: local stores take back its easy for consumers but complicated for Nike			
					Win-win strategy: relies on its partner network. So, NRC will arrange the collection and once its enough Nike can ship it to its facility without any shipment cost to NRC			
					Throwplace.com is an eco-non-profit organisation connecting businesses and donors for re-use, recycling and refurbishment			
Kumar, A., Tan, A.W.K., 2006, A dicision making model for reverse logistics in the computer industry. The International Journal of Logistics Management. 17(3), pp.331-354					Cost of reverse logistics is divided into 2 components: Unit cost and variable cost			
					Unit cost: Transport, custom duty, acquisition and handling		Make parts need to maintain higher resale price than buy parts for profitability or break even	
					Variable cost: Repair, re-use, scrap, store and freight(non linear)			
					Types of returns: Make parts (repacked, repaired and scraped within organisation) and purchase parts (exchanged with suppliers, organisation does not have expertise to make them)		Quality of return has significant impact, so effective gate keeping will avoid additional logistics cost and storage of scrap	
					Types of servicing: best (quantity of scrap is 0), average (quantity of make parts same as quantity of buy parts) and worst (scrap)		Quality of return has significant impact, so effective gate keeping will avoid additional logistics cost and storage of scrap	
					Simulating the model: Its been tested on 3 dimensions: Return quantity (low-volume, medium volume and high volume pieces), Freight charges (Fixed amount for low-volume and discount for high volume)		Delays associated with make parts caused by transport and delays associated with buy parts made by suppliers in collection has severe impact in profitability or even may lead to loss in reverse logistics	

					and Quality of return (High, average and poor)			
Cialdini, R.B., Demaine, L.J., Sagarin, B.J., Barrett, D.W., Rhoads, K., and Winter, P.L., 2006. Managing social norms for persuasive impact. Social Influence, 1(1), pp.3-15.	Arizona's Petrified Forest national park	visitors	2655	5 weeks consecutive weekends	put 3 signs on 3 dominant sites in park where theft of wood is common for 2 hrs at a time. They were rotated around the site	Qualitative (Observation)	More focus was in negatively worded than in positively worded signs	desired change depends on the quality of argument
					during 2 hrs 20 petrified wood pieces were placed along each of the paths			
					at the end of each 2 hrs observer counted and placed number of missing woods and changed sign			
					Injunctive normative information: negatively worded phrase was "please do not remove the petrified wood from the park". It was accompanied with a picture of person stealing with a red circle and cross in it			norm based persuasive messages can affect societal relevant responding to a significant degree. Moreover, type of normative information presented can dramatically alter the responding
					Injunctive normative information: positively message was "Please leave petrified wood in the park" accompanied by a picture of person admiring a piece of wood			
					Descriptive normative information: negative wording "many past visitors have removed the petrified wood from the park, changing the state of the Petrified Forest". It was accompanied by a picture of 3 visitors taking wood		desired outcome was fostered with the negative message of park thievery is consistently disapproved however the outcome was diminished by sign saying park thievery is constantly carried out	negative injunctive normative message is effective and negative descriptive normative message is not effective
					Descriptive normative information: positive wording "the majority of past visitors have left the petrified wood in the park, preserving the natural state of the petrified forest". It was accompanied with picture of visitors admiring wood			
					the signs were also shown to the 72 college students from Arizona State University to ask how they would react			
Vermeir, I., and Verbeke, W.,	Flanders, Belgium	youngsters	456	-	3 individual and social determinants of behavior	Quantitative (ANOVA)	facilitating the right values through socialisation and national	correlation between the attitude towards sustainable

2006. Sustainable Food Consumption: Exploring The Consumer "Attitude-Behavioral Intention" Gap. Journal of Agricultural and Environmental ethics. 19, pp.169-194.					intention are: values, needs and motivations; information and knowledge and behavioural control		institutions can help in achieving long-term sustainable consumption behavior	consumption and behavioural intention is strongly positive
					negative attitude is found for: price, convenience and conservation			
					although people believe in sustainable behavior they become passive during action		providing information through labelling system proved to be ineffective	
					values play an important role in decision making, as it motivates action, giving it direction and emotional intensity		Lack of availability of the sustainable products in the market is also one of the factor leading to passive behavior.	
					involvement is also an important factor in motivation, it gets activated when there is a goal			
					access to clear and reliable information is also an important attribute for motivation		consumers who received sustainable message were more involved with the sustainable behavior than those of who received tourist information	high knowledge tend to be associated with high behavioural intention
					participants were provided with the manipulated article describing the benefits of sustainable products to consumer, environment and society			
					other participants were given similar article but discussed the tourist national park		women have significantly more positive attitude than men	
					In the "high availability" message, participants were informed that "Le Fermier" products are widely available that could be checked on website or by call. In message 2 well known labels were shown		some consumers are strongly positive but do not engage in purchasing (9.4%) as they think product is not easily available. However some do not feel positive yet want to get involve (17.5%)	positive attitude and high behavioural intention have the highest involvement
					in 7 pointer scale they were asked to what extent they think that Le Farmier products were easily available in the neighbourhood			
					questionnaire consisted of one text, one informational message and numerous items to be scored			
Curran, A., Heaven, S., Williams, I.D.,	Bath, Swindon and	recycling officers, bulkey waste	225 household s	-	Bath was cited as a good presence of social organisation with collection	Qualitative (quessionare/personal visits)	32% response rate, 65% discarded bulkey items in last 12 months.	HH bulkey waste involves around 65% of country's HH each discarding average of

2007. Management of household bulky waste in England. Resource, Conservation and Recycling. 51, pp. 78-92	Portsmouth (1000) respectivel y	collection managers and HWRC's council depots visits	and 1000 HH		and re-use of bulkey items, Swindon was considered as poor and in Portsmouth there are charitable organisations that may take items for resale			132kg of item per year equating to almost 1.8 million tonnes
							approximately 82 items are estimated to be re-used	dominant way of disposing waste is HWRC where its taken free of charge. 1/3rd residents gave away items to charity in Bath and Swindon
							7% is thought to be privetly sold or given away	hh disposal route has potential for re-use
							means of collection/disposal were council collection, charity, commercial, HWRC, gave away and by other means	HWRC location is near by it is likely to be the dominant disposal route
							of 632 items around 179 is estimated to be re-used in Bath	charity or social enterprise do provide collection service of bulky items if they are in proximity. However, they are often poorly fuunded and reliant is on grants, volunteers and donations
							In portsmouth the items are given ot taken to the council around 74% residents phone for collection and 26% goes by themselves	third sector organisations need cooperation from local authorities for their success, either in the form of financial terms or via collection requests
							60% said that they would give away the items to friends, family or organisation yet only 16 to 20% does that in reality	council managers have little incentive towards re-use as they tend to focus on cost-effective manner which means taking waste to local transfer station where their responsibility ends
								further study needs to be conducted on the environmental impacts of various routs for handling buly items. Also, the economic and operational barriers faced by collection agencies and community organisations
Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J., and Griskevicius, V., 2007. The cosntructive, Destructive, and Recosntructive powers of Social Norms.	San Marcos CA	households	290 (3 withdr ew leaving 287)	-	study has 2 feedback (descriptive norm only vs. descriptive and injunctive norm), 2 consumption (above vs. below average) and 3 time (base line, short-term follow-up and long-term follow-up)	Qualitative	hh with above average condition, descriptive norm only condition proved to be effective with significant decrease in consumption compare to baseline	social norm can be constructive, destructive and reconstructive
					prior to the experiment meter reading was taken twice in 2 weeks period and			injunctive message eliminated the boom range effect

Association for Psychological Science, 18, pp.429-434.					the difference was established as base line			
					2 weeks later 3rd meter reading was taken and a written message that reported the baseline energy consumption was left in the doors of residents			
					one week later again another normative message was left in doors that provided the feedback of energy consumption between 1st and 2nd baseline		on the other hand hh with below average condition started using more energy when received descriptive message only	Descriptive normative message could be constructive for those who are involved in destructive behavior but same message could be destructive for those involved in constructive behavior.
					a final meter reading was taken after the 3 weeks of second feedback message. Short-term and long-term consumption were calculated			
					in the descriptive only condition these messages were left: the amount of energy they have used in the previous week, actual energy consumption of the average hh in the neighbourhood and suggestions to conserve energy		in case of injunctive message hh with below average continued to use less and alos above average serve to decrease energy use	both descriptive and injunctive norms together can result in larger behavior change than presenting them in isolation
					in the descriptive injunctive condition residents received same information as above just with the addition that for the hh who consumed less than average a smiley with happy face and a smiley with sad face for those who consumed more than average		the result of both short-term and long-term measures were consistent	personal benefit and social approval are the important factors to influence behavior
Collier, J., and Esteban, R., 2007. Corporate socal responsibility and employee commitment. Business Ethics: A European Review. 16(1), pp.19-33.	-	-	-	-	3 sources are discussed: academic research on organisational motivation and commitment, employee perception on inside and outside the company environment and empirical studies of employee attitude and behavior in working place in UK	-	45% give ethics training to staff and only 64% include ethics in the induction	3 main points: ethical programmes can embody elements of both integrated and decoupled CSR practices, it may be difficult to categorise CSR behavior as one or the other and commitment of senior management is vital
					In UK 90% of FTSE 100 and 60% of FTSE 350 have adopted code of conducts, however its significance		employee is an important element to deliver the social and environmental responsibilities in	

					vary from company to company		fictive way they need motivation and commitment to do so	
					majority of organisations are not capable of delivering the needed welfare improvement task, so its common to have partnership with NGOs in gaining wider acceptance		company needs to set goal to achieve the desired outcome	
					3 types of commitment: affective, normative and continuance		commitment can lead to achieve the goal	ways in which employees think about their organisation shapes their behavior
					affective commitment: driven by attachment to the organisation		commitment needs ethical climate and ethical culture	
					normative commitment: belief that there is an obligation to remain in an organisation		these ethical climate and culture can to some extent be regarded as control systems to regulate and influence behavior	
					continuance commitment: benefits in the terms of cost		by adopting the ethics of culture and climate business becomes value-driven and finance driven	employees experience in their working life plays an important role in their personal and psychological health
					ethical climate: temperature		pressure from stakeholders could also lead to improve behavior	
					ethical culture: sense making devices such as rules, codes, rituals, rewards and leadership			
					Weaver and Trevino (1999), identified 8 salient behaviors: awareness of ethical issues, commitment to the organisation, integrity, willingness to communicate openly about the issues, willingness to report ethic compliance, improved decision taking, willingness to seek advice and reduced unethical conduct		the believe held by employee as to how outsiders see organisation is personal and differ from employee to employee, so it is opposed to the group behavior	strong organisation identification can translate into the citizenship and cooperative type behavior
					2 aspects of organisation image: one is the way public perceive and other the employee believe how others see		recent national survey conducted by MORI (Webley and Dryden 2005) covering 759 employees shows that 65% organisations have written standards, 52% have anonymous reporting system, 47% have an advice centre and only 50% give ethic training	it is necessary for ethics to become embedded in the cultural fabric of the business and the heart and mind of members
Manaktola, K., and Jauhari, V., 2007. Exploring consumer attitude and behavior towards green	National capital region of Delhi, Gurgaon and Noida	hh	66	-	hotels functional performance is the major factor that attributes to the core importance from consumer perspective, environmental performance	Qualitative (structured questionnaire, likert-scale and multi variant analysis)	consumer look for the tangible demonstration of a firm's commitment	firm's subscription to ISO9000 or environment partnership and training to employees could influence consumer to stay in environment friendly hotel

practices in the lodging industry in India. International Journal of Contemporary Hospitality Management. 19(50, pp.thirty-six4-377.					is the secondary benefit they look into			
					according to Foster *et al*. (2000), hospitality sector is under pressure to become environmental friendly from following forces: consumer demand, increasing environmental regulation, managerial concern with ethics, customer satisfaction, maintenance issues, and aesthetics		22% of respondents take initiative seriously, 55% pay attention to environmental initiatives and 23% do not bother	
					consumers may be willing to act environmental friendly, however not in the stake of quality of life and paying more		33% feel that environmental cost should be shared between hotel and consumer, 52% feel hotel should absorb the whole cost and only 15% are willing to pay full	the environmental friendly firm will score higher in case when firms offering similar level of services
					75% above 26 years of age, 96% with PG qualification, 51% working services, 28% self employed, thirty-six% of self employed spend 5 to 6 nights in hotel per month for business. 13% stay in luxury hotel, 39% in high end, 25% in economy and 15% in resort		71% feel to get rewarded for frequent visits in hotel with green practices	despite of the positive behavior consumers are not willing to pay for the hotel environmental cost
Budeanu, A., 2007. Sustainable tourist behavior - a dicussion of opportunites for change. International Journal of Consumer Studies. 31, pp.499-508.	-	-	-	-	European found the poor environmental quality as the most disturbing aspect and disappointment for their holiday	-	Over half of German and Dutch expect their destination to have good quality environment, so they do not consider it necessary to enquire about it prior to purchase	tourist do have lot of concern regarding the environmental and social quality of destination.
							Over 85% of British consider it very important to have harmless environment holiday, so 32% choose their destination that are designed to reduce the negative impact on destination	70-80% tourist state high concern regarding the eco social component only 10% convert this concern into purchasing decision
							Dutch tourist are unwilling to pay for any environmental protection, 81% British are willing to pay up to 3% of their holiday.	Majority are reluctant to change their behavior in support of sustainability goals
							Thailand have no desire to pay for holiday but are willing to pay to improve the quality of service	Positive attitudes towards environment is not reflected in the action
							After experiencing the green labelled hotels 69% of Dutch are willing to pay extra for staying at eco lab bled hotels	Only instances when tourist motivations coincide with environment is when they have clear intention to benefit the destination, such as voluntary holidays, eco tours etc.

							some of the tools that can be used to shift the behavior are: increasing the cost of environmentally destructive behavior, decrease cost of pro-active behavior, provide education for awareness, give feedback about the consequence of behavior, rationalising available resources for better distribution	environmental attitudes are shown to be lower importance in comparison to the habitual lifestyle
							In 2002 (Font and Tribe, 2001), did study on use of eco labels for tourism, it concluded that too much use of eco labels confuse tourist and annoy them. Second, eco labels seem to miss the intention of environmental purchasing and serve more general awareness and business to business promotion	even during the usage of environmental friendly product, people tend to use it for longer as they think they are already doing their bit by using environmental friendly facilities. Eventually consuming more resources, this phenomenon is known as rebound effect
Campbell, J.L., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. Academy of Management Review. 32(3), pp.946-967.	-	-	-	-	relationship between the economic condition and socially responsible corporate behavior are: public and private regulation, presence of other NGOs that monitor, institutionalised norms regarding appropriate behaviour, associative behavior among corporation themselves and organised dialogues among corporations and their stakeholders	-	economic condition affect the socially responsible behavior but the relationship is mediated by other institutional factors as well	Literature so far suggest that financially strong organisations are more likely to behave in socially responsible way than weak financial organisations
					Maignan and Ralston (2002), study of 100 firms in UK, Netherland and USA identified 3 motivations for corporations to behave in socially responsible ways: managers believed such behavior as its own right, they believed such behavior has enhanced financial performance and stakeholders especially community grps and customers pressured them to behave in socially responsible way			competition makes socially responsible behavior strong. However if competition is weak and a modest profit is assured then company are less likely to behave in socially responsible manner. Also, if there is monopoly then firm tend not to incorporate social responsible behavior
					socially responsible behavior could be defined in 2 ways: one taking international standards as the			sometimes self regulation emerges as firms fear that the regulations are not that

					benchmark to judge the behavior, second taking stakeholders expectations as the benchmark			effective. It balances political forces and legal institutions
					socially responsible behavior could be judged in 2 ways: if corporation is intentionally not doing any harm to its stakeholders, community, employees, customers, suppliers and second if they did any harm they rectify it when harm is discovered and brought to their attention			communication and education also affect the corporate behaviors
Kumar, S., Putnam, V., 2008. Cradle to cradle: Reverse logistics strategies and opportunities across three industry sectors. Int.J. Production Economic. 115.pp. 305- 315	-	-	-	-	SWOT analysis of 3 industirs, automobile, electronics and appliances	Qualitative (SWOT analysis)	Literature review analyse that along with regulatory forces, there have been societal and resource drivers that have required industry and consumenrs to focus on ecological sustainability	Economic efficiency is achived by EU regulatory as they have placed the financial cost on either the product users or the manufacturers.
							The automotive industry appears to be prepared to meet the 2006 requirements for ELV recycling. Manufacturers have stepped forward to accept the producer responsibilites. Producers are aligning with dismantlers and recyclers. Used parts reintroduced in supply chain. Shairing information on components and disassembly producers is beginning to occur	Extended producer responsibility drives improved environental and economic efficiency and also fecilitate other members of supply chain.
								To handle the complexity of reverse supply chian it could be outsourced to third party sector and the selection is based on the ability to handle. Information system and physical infrastructure are also key factors in the success of reverse supply chain
							Electronic industry is a challange, as products are designed to build from scratch. Manufacturers can be profitable by including recycled materials in production process moreover green label attracts consumer. Product functionality can be upgraded to increase the life span (multi lifecycle engineering.	Remanufactured products incur costs that are 40-60% less than new as most raw materials already exist
Alexander, C., Smaje, C., 2008. Evaluating third sector re-use organisations in the UK: case studies and analysis of furniture re-use	UK (London & provincial city)	FROs (furniture re-use organisations)	2	2005-2007	both collect furnitures from donors.	Qualitative and quantitative (published repots, in-depth interviews (managers, staffs, proffesional, volunteers),	Quantifiable evidence failed to give the full picture of the effectiveness of re-use organisations with respect to socio-economic valkue added.	some benefits are partly subjective and other social benefits are hard to link directly and solely to re-use schemes activities. So qunatification of these benefits require further research
					differences between 2 schemes affecting the operations and outcomes are: cost, size, vehicle type and revenue sources			
					evaluation method used following factors:			further research needs to be conducted to find out the

schemes. Resource, Conservation and Recycling. 52, pp. 719-730					environemntal cost of vehicle used, environmental cost of premisis, landfill diversion, avoided resource use, existance value, undesirable work, relief of client hardship, improving social housing, developing huma capabilities, economic cost of shceme, avoided alternative collection cost, avoided alternative disposal cost, revenue	observarions 9vehicle collection & delivery crew), face to face interview (donor & clients), telephone interview (dononrs and clients))		recognition and account for the spread of added value benefits across LA dept. and statutory agencies
Atasu, A., Daniel, V., Guide, R., Wassenhove, L.N.V., 2008. Product Re-use Economics in Closed-Loop Supply Chain Research. Production and Operation Management. 17 (5), pp. 483-496	-	-	-	-	Foundation of CLSC re-use economics research: strategic issues in product recovery management , Production planning and control for remanufacturing and managing product return from remanufaturing	Qualitative	today there are only few products where assumption of perfect susbstitution of remanufactured products to new products can be justified	little is known about the consumer perception about remanufactured products. As consumer valuations are hetrogeneous these assumptions needs to be tested empirically
					several critical reviews of analytical research paper invovles: CLCS design stream ,strategy stream and behavior stream papers			
					Design stream papers involve: impact of limited durability and finite life cycle on remanufacturing, matching supply and demad to maximise profit from remanufacturing, CLSC model with remanufacturing and time value of commercial product return		marketing and sales groups hold emotional view about cannibalisation of new products and this view is instilled by misaligned sales rsther thsn market research	It is right time to return to the field to understand the pressure, as prominant pressures are cannibalisation, diffusion and valuation
					Strategy stream papers invovle: compitition in remanufacturing, compition effect on recovery strategies, market segmentation and production technology selection and life cycle porfoli for remanufacturing products		companies lack data to objectively assess remanufacturing profitibility as well as expertise necessary for consumer behaviour research. Similar lack of understanding related to reseller returns and consumer returns	
					behavior stream papers involve: coordination with supply chain to avoide false faliure return and cannibalisation in sale of new products due to remanufacturing products			
Goldstein, N.J., Cialdini, R.B.,	south west (mid sized,	guests	190 rooms,	80 day span	2 different message sings were created.			Participants were more likely to follow the descriptive

and Griskevicius, V., 2008. A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. Journal of Consumer Research, 53(3), pp.472-482.	mid priced hotel)		1058 instances		One with standard environmental message without any descriptive normative information saying "help save the environment"	Qualitative (Chi square test)	Descriptive norm condition yield higher towel re-use rate (44.1%) than standard condition (35.1%)	norms of a group in individuals with whom they shared the same setting than the norms of groups sharing the social identities
					Other descriptive normative message informed guest that majority of guest participate in re-use towel programme it said "join your fellow guests in helping to save the environment. Almost 75% of guests who are asked to participate in our new resource savings program do help by using their towels more than once. you can join your fellow guests in programme to help save the environment by reusing your towel during your stay"			
					they were asked to put towel on the rack if willing to participate or else put it in floor			
					at the back the information about the benefits of reusing was provided			
					the hotel room attendants were provided with the relevant training to facilitate the task			
					one wheel prior to data collection each of the rooms were provided with either of signs			
					it was made sure that no one participant take part in the experiment more than ones			The results from the current investigation indicates that managers, policy makers, and communicators implementing a descriptive normative component to their persuasive appeals or information campaigns should ensure that the norms of the reference group are as situation ally similar as possible to the intended audience's circumstances or environment
			1595 instances	53 day span	5 different message signs were created urging guests to participate in re-use towel program. 2 were same as above		All 4 descriptive norm messages influenced more (44.5%) than standard message (37.5%)	
							Same room identity (room number message) yield higher towel re-use (49.3%), than other 3 descriptive messages (42.8%)	
					3rd message was specific with room number, 4th said fellow citizen and 5th said Men and Women		other 3 descriptive messages the citizen identity (43.5%), the gender identity (40.9%) and the guest identity the room number (44%) did not differ much	
Nolan, J.M., Schultz, P.W.,	California	hh	810		Self reported intention was calculated by asking how	Quantitative (ANOVA)	people are motivated to conserve energy to save the environment and	-

Cialdini, R.B., Goldstein, N.J., and Griskevicius, V., 2008. Normative Social Influence is Underdetected. Society for personality and Social Psychology, 34, pp.913-923.				Oct 2003 to Jan 2004	often do you conserve energy? Never (1), sometimes (2), frequently (3) and almost always (4)		tend to generate casual theories that are self serving	
					other question was, in deciding to conserve energy, how important is it to you that using less energy saves money, saves environment, benefits society and a lot of other people try to conserve. Not at all (1), somewhat important (2), very important (3) and extremely important (4)			
					To evaluate the relation between belief and intention questions were: how much do you think conserve energy will save environment, society, money and how much do you think you neighbours try to conserve? Response were on 4 point scale		they are less likely to believe that behavior of others would have an influence on their own conservation behavior	
					Descriptive norm active beliefs were assessed with 3 questions: how often do you think your neighbours try to conserve/ city try to conserve? Californians try to conserve?			
					Data was collected via interview and from Social and behavioural research institute. The response rate was 40% and the cooperation rate was 48%			
			981 (509 partici pated)		participants were randomly assigned with one of five messages: descriptive norm, self interest, environment, social responsibility and information only control		participants in the descriptive norm condition reported that message was least effective	
					initially residents received the postcard with University information saying that a survey will be conducted		social and environmental conditions influence most	
					after 5 days persuasive messages for conserving energy were hanged on their doors with University logo on it		Although environmental conservation and social responsibility were rated as strong reason for conserving energy, however, the environmental	

					4 messages were written: taking shorter shower, switching off lights, turning off the air conditioning at night, use of fans rather than air conditioners		protection and social responsibility messages fail to produce behaviour change	
					Face to face interview they asked them how much did the information on these door hangers motivate you to conserve energy?		People hold incorrect beliefs about what motivates them to conserve and may not be able to predict which strategies will be most effective	
					along with this the electric meter reading was also taken 4 times during the study			
Baker, J.P., and Ozaki, R., 2008. Pro-environmental products: marketing influence on consumer purchse decision. Journal of Consumer Marketing. 25(5), pp.281-293.	40 mile radius of London	women ethos shopped at supermarket	52	-	emotional messages may be processed thoroughly and remembered better	quantitative (regression analysis)	environmental behaviors are not significantly affected by environmental beliefs	they want to be informed about the clear benefits and what environmentally friendly products are
					normative influence regarding the decision making and purchasing depends on the characteristics of the product		product performance belief is affected by environmental belief	
					questionnaire with: general environmental beliefs, environmental behavior (6 related to purchasing behavior and 8 to general behavior), marketing and brand attitudes,		Consumer evaluate the product by its attributes such as functionality and ease of use. When these do not satisfy the values do not become behavior	
Alexander, C., Curran, A., Smaje, C., Williams, I., 2009. Evaluation of bulky waste and resue schemes in England. Waste and Resource Management. 162 (WR3), pp. 141-150					quantitative data were collected from varuious sources and then matched with qualitative the sources are: FROs standard list of weights, survey data, census data and websites		32% response rate, 65% discarded 1191 nulky waste in 12 months, follwing FROs weight it come out to be 40T	respondents in high deprived area disposed more bulkey waste than those in affluent area
					The sample included faith based FROs whoes primary aim is poverty, social enterprise, emphasising landfill diversion and close links with social housing sectors			Location is a significant factor in collection of bulkey waste and operation of FROs
	London, Bath, Swindon and Portsmouth	hh, FROs employees, volunteer and LA waste officers and staff	1450, London: 40 (dense housing estate), 20 (small		available ans selected disposal routes were: HWRC, WCA and FROs		75% of these waste were collected by local authorities the remaining went to commercial skip, FROs (7%), sold (1%) and passed on or fly tipping (6%)	There is a clear capacity to extend the connections with better provision for selecting & sorting items for re-use & improved material segregation
					reusability depended on : condition, collection method, storage facilities and aesthetics			More widespread and effective use of filtering mechanisam would reduce the number of donated items not fit for re-use

			provincial town)		expertise needed for testing and reconditioning		59% re-use is possible from HWRC. FROs discovered the range of re-use rates as: 9-54% (hard furniture), 13-20% 9soft furniture and 30% for weee	Improve links between councils bulkey waste collection services & FROs
					different methodologies for evelauating benefits: CBA, 3BL, LCA, EIA & SIA			Information & communication not only thorugh internet but also thorugh other means. For instance, by LA housing dept, removal companies, housing association, estates agencies
					factors effecting operation and cost: location, cost schedule, integration and size and longitivity		approximate re-use rate reported by FROs is 50-96%	Encourage formalising local swap days
Nye, M., and Hargreaves, T., 2010. Exploring the Social Dynamics of Pro-environmental Behavior Changes: A Comparative Study of Intervention Processes at Home and Work. Journal of Industrial Ecology. 14(1), pp.137-149.	UK	construction company called Burnetts	16 champions and 19 colleagues	Dec 2006 to Nov 2007	behavior is guided by the situations and these situational definitions encode the distinct "social values and norms concerning involvement" (Goffman 1963a, 193) for every social encounter	Qualitative (semi structured interviews)	29% decrease in waste to landfill and 5.4% decrease in electricity usage	similar mechanism work in different ways at different social context, so social context needs to be understood and accounted for behavioural interventions
					first exploring the behavior pattern in work place and influence pro-environmental behavior and then examine how such behavior is negotiated in home			
					Nov 2006, 16 (8 men and 8 women from mid 20s and late 50s) individuals from 280 people were drawn from different department and an Environment Champions team was formed			
					Jan 2007 team conducted an audit of office waste and electricity		outcome was positive and was collective	
					April 2007 they found that company emit 297 tonnes square of CO_2 and 11.7 T of waste is send to landfill of which 58% could easily be recycled			
					ideas came out to improve the situation from uncontroversial like putting up posters to radical like No bin day or no electricity afternoon			
	Nottingham and East Sussex	hh	-	Nov 2006 to	Ecoteam lead the whole program. They brought together grp of 4 to 8	Qualitative (4 focus grp and 39 interviews)	key benefit in participating eco programs is that you need to meet	

				July 2007	individuals from same community		similar people and share your ideas and views in similar ways	
					meetings were held once per month and they discussed about several environmental issues			
					participants were also provided with the written materials to help them support behavior change towards those practices			
Knowles, K., and Espinosa, A., 2009. Towards an Holistic Framework for Environmental Change: The Role of Normative Behavior and Informal Networking to Enhance Sustainable Business Practices. Syatem Practice Action Reseearch.22, pp.275-291.	-	-	-	-	an employee discusses about the EMS with one of his friends. The discussion goes on and grp identifies the numerous eco activity that could be relevant to the business and employee report it to the environmental manager. Then environmental manager access the feasibility within the business remit. accordingly the adoption or avoidance is provided as a feedback to the grp thus cyclical feedback	Qualitative (bottom-up approach)	most pursue environmental activities at home than work	implementing short-term environmental practices to incur long-term benefits may be the better idea than scaring everyone off the first hurdle
					to design a new EMS approach following activities are required: diagnosis of existing culture and scaling of environmental prioritisation, identification and support of informal network operating in environmental actions, collaborative design of environmental strategies, monitoring of environmental strategies, designing structu7ral mechanism to foster cohesion and accountability of informal eco network, implementation of EMS and development of self regulatory mechanism		environmental actions or activities are generally reduced to voluntary actions without disrupting the job requirements and aggravating managers	criteria required for the encouragement are: cultural engagement through informal networking, environmental prioritising within social development, structural design and monitoring systems
					basic questionnaire was prepared and they were asked about the environmental behavior at home and work		work and eco network requires a focused effort to resolve the structural holes in current communication channels	

Curran, A., Williams, I.D., 2010. The role of furniture and appliance re-use organisations in England and Wales. Resources, Conservation and Recycling. 54. pp. 692-703	UK	-	-	2005-2008	data of re-use organisation in UK was collected through several means such as websites, survey, site visits and interviews	Qualitative	FRN membership form (2007-08): 249 organisations, 2006-07: 130 organisations	sources of items are public donations and retailers
							FRN survey 2005: 90 organisations	distribution of re-used items: around 76% to low-income grp and 24% t general public
					to capture the size of re-use organisations on the basis of staff head count organisations were divided into 3 catagories: micro (<10 annual work unites (AWUs)), small (<50 AWUs) and medium (<250 AWUs)		site visits and interviews in 2007: 20 organisations	around 85% re-use, 6% recycling & 8% landfill & inceneration
							micro organisations: 112 (48%), small: 113 (48%) and medium: 9 (4%)	full time, part time & volunteers staff the most
					249 number of organisations have been studied, however 404 re-use organisations known to exist in UK		2006-07: 6619 items re-use is the mean value per organisation	Suggestion for future research include: develop a model to show the value of social impacts of re-use and an assessment of the current partnership pf re-use organisation with LAs and HWRC
					basic operation of re-use organisation requires: collection, labour, vehicle, premisis, processing incoming item, redistribution		93% of these organisations are charity, 71% are member of FRN, 48% opted for CRN membership and 41% were member of National Council of Voluntary Organisation (NCVO)	
Gockeritz, S., Schultz, P.W., Rendon, T., Cialdini, R.B., Goldstein, N.J., and Griskevicius, V., 2010. Descriptive normative beliefs and conservation behavior: The moderating roles of personal involvement and injuctive normative beliefs. European Journal of Social Psychology, 40, pp.514-523.	California	residents	1604 (678 males and 926 females)	2 years	Descriptive normative belief was measured by asking how often do u think that your neighbours try to conserve energy.	quantitative (Pearsson's correlation coefficient)	Descriptive normative beliefs would be more strongly related to the individuals who were less involved in conservation issues.	combined normative messages including both descriptive and injunctive normative information have higher impact on behaviour than messages only including one of these norms
					along with that they were also asked about their friends, citizens and Californians (1 never, 4 always0			
					Personal involvement was measure by asking questions: how often do u think about energy conservation? How big this issue is in your life? How much do u care? Knowledge about this?			
					Injunctive normative belief was measured by asking: how much do u think your neighbours approve of people who try to conserve? Similar with residents, Californians			Individuals are less likely to cooperate and act in ways that benefit the group in the absence of evidence that others in the group are cooperating
					Interviews were collected in collaboration with the Social Behavioural Research Institute at California State		If people think about or elaborate on the reasons for energy conservation, the relation between descriptive belief and behavior will	

					University San macros. 40% was the response rate and each interview took for 13 min		weaken. Furthermore, high injunctive normative belief should strengthen the relationship between descriptive normative beliefs and behaviours	
Blasco, M., and Zolner, M., 2010. Corporate Social Responsibility in Mexico and France: Exploring the Role of Normative Institutions. Business and Society. 49, pp.216-251.	France and Mexico	-	-	-	USA and UK, although being similar nations in terms of political and culture have different CSR initiatives	-	business that do contribute the charity have tended to favour ad hoc charitable donations	-
					In UK, CSR is endorsed by business, civil society, and policy makers in both executive and legislative branches of govt		corruption coupled with poor law enforcement has led to disincentive to responsible corporate behavior	
					In USA, CSR are unconnected, lack in clear principles and commitments and issues are resolved in the court rather than in congress debate or public		French organisations in comparison to Mexico has been more effective in CSR	
					3 dimensions of CSR: practical, semantic and theoretical		civil society and market tend to act in favor of their own interest rather than common good	
					Practical: actual degree to which business acts ethically to the given context		from semantic point of view both countries look at CSR in different ways, although they have same roots of catholic social doctrine	
					semantic: how ethics is spoken about		French sees CSR as an individual choice of business that cannot be forced on others. Whereas Mexico sees it as a moral obligation of business to the community as set of universal code of conduct	
					theoretical: how CSR is conceptualised			

9.2APPENDIX II

9.2.1 Information from Organisations Reports

This Appendix details out the information extracted from the organisations reports (Table 9.3: Pilot study and Table 9.4: Content analysis) and has aligned those information with CEBA to carry out the analysis in a systematic manner.

Table 9.3: Pilot study

Categories **Organisation-Type**	**Communication: high means control, high attractiveness, high credibility**	**Engagement/ Action: economic benefits, non-economic benefits**	**Behavioural Maintenance**	**Avoidance of value action gap**
Mixed retailer	• Reduce, re-use, recycle and recovery as a waste hierarchy. • Segregation of waste at source. • Collective work through online survey to changing needs. • Sharing information through best practice guidelines. • Diverted 92.1% waste going to landfill. • At Liverpool 192 sofas for re-use and recycle, of which 65% sofas re-used. • Introduced new ways of re-use packaging.	• Less wasteful, incorporated stock control management. • Strong relationship with internal and external stakeholders. • Food feed to the people in collaboration with a food retailer. • Partnership ensures that people work together effectively. • Win-win approach with T11. • Work closely with local suppliers.	• Exploring innovative ways of treating waste. • Sites are risk assessed on regular basis • Pre-assessment of new suppliers.	• Diverse employment market and multi-generational workforce and supporting priority groups.
Food retailer	• Zero landfill food waste policy. • Have climate change strategy at operations, product and customers level. • Compare to competitors and regularly take an external and internal perspective on performance. • Over 9m items of clothing and 1.7m books donated. • Over 2m meals donated UK's largest food drive. • Donate food fit for consumption to charities and send bakery waste for animal bedding.	• Critical values to be most trusted retailer, where people love to work and shop. • Long-term sustainable partnership with suppliers.	• Have monitoring and tracking performance measures in place.	• Encourage disadvantage groups, awarded gold accreditation for investing in staff for business improvement
Construction	• Follow UK waste hierarchy site by site to reduce waste. • Engage with employees through roadshows and feedbacks, costumers through satisfaction surveys and community through Considerate Constructors Scheme. • Commitment to share best waste practice extends to suppliers and subcontractors. • In 2012-13 re-used: 39.4%, recycled and recovered: 31.2%, disposal went up by 2.4%. • In 12 months 477T waste wood either re-used or recycled.	• Collaborative bid success, obtained funding from Business, Innovation and Skills. • Donated around 185,486 man-hours for community work and raised fund of around £113,028 for charity partner. • Partnership agreement with National Community Wood Recycling Project, signatory to the WRAP half waste recycling.	• Effective risk management • Independent assessment of management system.	• Offer training and volunteering opportunities to increase employment for diverse workforce.

Self-proclaimed vanguard	• Zero Waste to landfill. • Swapping raised £2.3m for a charity this year and re-used or recycled around 3.8m items was re-used through swapping scheme. • Fresher for Longer initiative, practical advice for customers for usage of store and food properly. • 28% reduction in overall waste production and 32% reduction in food waste since 2008/09.	• Partnership with suppliers and retailers part of Courtauld commitment.	• -	• Extending garment re-use/exchange scheme at work to make it easier for community involvement.
Charity	• Follow principles of 4Rs (reduce, re-use, repair and recycle). • Community involvement and raising waste reduction awareness. • New look shop approach, a way of marketing. • Over a year more than 3.8m items were swapped raising £2.3m.	• Strengthen donor relationship. • Strengthen relationship in home and abroad. • Collaboration with one of the food retailers where they have 460 banks in 300 premises.	• Built partnership through pre-assessment process. • Internal control and risk management system in place for measuring performance.	• Humanitarian and strategic aims based on fundamental human rights. • Equal opportunities policy, training, targets and practical actions.

Table 9.4: Content analysis

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
Retailers	R0 (Recycling)	Reduce, re-use, recycle and recovery as a waste hierarchy.	Less wasteful, incorporated stock control management.	Exploring innovative ways of treating waste.	Diverse employment market and multi-generational workforce and supporting priority groups.
		Segregation of waste at source.	Strong relationship with internal and external stakeholders.		
		Collective work through online survey to changing needs.			
		Sharing information through best practice guidelines.	Food feed to the people in collaboration with a food	Sites are risk assessed on regular basis	
		Diverted 92.1% waste going to landfill.	Partnership ensures that people work together effectively.		
		At Liverpool 192 sofas for re-use and recycle, of which 65% sofas re-used.	Win-win approach with T11.	Pre-assessment of new suppliers.	
		Introduced new ways of re-use packaging.	Work closely with local suppliers.		
	R0 (Re-use)	Sustainability clothing Action Plan will undertake 3 key areas, one of which is re-use and recycling	In Liverpool 192 sofas re-used or recycled set to launch this scheme in partner with T11 nationwide to collect and pass the HH furniture items	Exploring innovative ways of treating waste.	Diverse employment market and multi-generational workforce and supporting priority groups.
		Follow the UK waste hierarchy			
		Introduce re-use for toy and stationary product lines			
		"breath new life into waste" a vision of making waste into raw materials for further use	Using surplus food to distribute to the charity	Sites are risk assessed on regular basis	
		Make re-usable packs for unbranded mattress protector, pillow case, sheeting, curtain bags, shower curtain		Pre-assessment of new suppliers.	
		Collective work through online survey to changing needs.			
	R4 (recycling)	Zero Waste to landfill.	Partnership with suppliers and retailers part of Courtauld commitment.	-	Extending garment re-use/exchange scheme at work to make it easier for community involvement.
		Swapping raised £2.3m for a charity this year and re-used or recycled around 3.8m swapped items.			
		Fresher for Longer initiative, practical advice for customers for usage of store and food properly.			
		28% reduction in overall waste production and 32% reduction in food waste since 2008/09.			
	R4 (re-use)	Promote re-use and recycling through swapping clothes and re-use hanger	Avoided 3.8m clothes going for recycling or landfill by launching swapping with T1	-	Extending garment re-use/exchange scheme at work to make it easier for community involvement.
		Zero Waste to landfill.	Used home delivery services to collect nearly 2800 bed mattress and 4700 pieces of upholstered furniture for re-use or recycling		
		80% clothes hanger re-used in 2012 out of 16m	Raised £1.7m for charities in 2012/13 through 1 trip carrier bag scheme		
		In 2012 launched swap at work to make it easier for people to donate. 70 organisations signed up	Donated £3.6m of food, clothing and equipment to range of charities		
		Fresher for longer initiatives to help customer provide practical advice on avoiding food waste	Build partnership with charities to help customers		
	R5(recycling)	Reduce, re-use, recycle	In 2009, worked with third party waste provider to develop Next Waste Scorecard	Waste Scorecard used for annual assessment	-
		Waste increased by 7% from 2011 to 2012			
		No change in recycling from 2011 to 2012 it remains 85%			
		In house separating and segregating waste			
		From 2011 to 2012 1% increase in construction waste recycled			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		In store Green champions provided feedback on the way to reduce packaging with suppliers	Working with British Retail Consortium CC initiative to reduce energy and resource use, transport emissions and		
	R5 (re-use)	Priority of reducing volume of waste via re-use and recycle	Diverted 253T of waste to re-use for charities through 'refurnish' scheme	Waste Scorecard used for annual assessment	-
		3 R's reduce, re-use and recycle	Partner with Scrapstore that benefits to educate the value of re-use in schools		
		Green champions add waste reduction ideas			
		In store Green champions provided feedback on the way to reduce packaging with suppliers			
	R2 (Recycling)	Reduce, re-use, recycle as target to reduce packaging	Focused in working and communicating with supply chain	Monitor the weekly no. of GW bin uplifts	-
		Since 2006 90% reduction Co2 from waste to landfill			
		91% of waste diversion, 72% recycled remain to incineration			
		Promote best waste practice by visiting stores	Identified data management partner to provide better data on recycling		
		Achieved less than the 90% target in 8 construction projects in 2012 only 30% sent to recycling and 34% for energy recovery			
		In 2012, 9% reduction in own brand primary packaging	almost £700,000 contributed to charity and community organisation in 2012	Continues to monitor supply chain through site visits and desktop assessment	
		100% recycled content on one brand white paint pots			
		In house Youth Board project of closed loop thinking provided feedbacks which will be reviewed and incorporated	Training to the employees		
	R2 (Re-use)	Effort to re-use and recycle message from CEO	-	Monitor the weekly no. of GW bin uplifts	-
		Reduce, re-use, recycle as target to reduce packaging			
		Re-use and recycle the one planet home principles		Continues to monitor supply chain through site visits and desktop assessment	
		In house Youth Board project of closed loop thinking provided feedbacks which will be reviewed and incorporated			
	R3 (recycling)	Zero Waste to landfill.	Closing the loop project with a TSO for testing no. Of recycled materials for use	Sustainability score card for evaluating the products life cycle	Diversity and inclusion
		Food storage and waste-sorting products, customers can reduce food waste			
		Tips to tackle issues of food waste and CO_2 emissions on website			
		Introducing recycling points in centre helped customer			
		Sorting materials prior to recycling			
		2% increase in recycling and recovery rate from 2008 to 2012		Systematically tracking sub suppliers in supply chain via sub supplier tracking system	
		Manufacturing wood boards creates lots of waste wood which is either re-used as raw material of sold to other organisations.			
		Knowledge sharing workshop			
		Customer survey showed that 35% felt they could do more to live sustainably but cost is seen as barrier for 20% (Customer satisfaction index)	Long-term partnership to increase supply of sustainable wood with organisations which are FSC certified		
		Survey to engage workers			
		Listen and learn from stakeholders			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
	R3 (re-use)	Message from chief sustainability officer of promoting re-use and recycle solutions	-	Systematically tracking sub suppliers in supply chain via sub supplier tracking system	Diversity and inclusion
		Updates on website to tackle food waste		Sustainability score card for evaluating the products life cycle	
		LCA tool			
		Resource chain unit initiated in 2012 for use of recycled material and reverse material flow			
		Customer survey showed that 35% felt they could do more to live sustainably but cost is seen as barrier for 20% (Customer satisfaction index)			
		Survey to engage workers			
		Listen and learn from stakeholders			
	R6 (recycling)	Zero landfill food waste policy.	Critical values to be most trusted retailer, where people love to work and shop.	Have monitoring and tracking performance measures in place.	Encourage disadvantage groups, awarded gold accreditation for investing in staff for business improvement
		Have climate change strategy at operations, product and			
		Compare to competitors and regularly take external perspective on performance.			
		Over 9m items of clothing and 1.7m books donated.	Long-term sustainable partnership with suppliers.		
		Over 2m meals donated UK's largest food drive.			
		Donate food fit for consumption to charities and send bakery waste for animal bedding.			
	R6 (re-use)	Zero landfill food waste policy.	Re-usable bags in Wales saved 90% bags usage by customers and raised £32000 for charity	Have monitoring and tracking performance measures in place.	Encourage disadvantage groups, awarded gold accreditation for investing in staff for business improvement
		Help customer to reduce waste by amending 'display until'			
		Encourage re-use by giving nectar point			
		Compare to competitors and regularly take external perspective on performance.	Donate food to T4 and food cycle		
	R7 (recycling)	Zero to landfill and waste prevention as key objective	Charity partnership with a TSO in May 2012	Working in partnership with food supplier on preventing waste in the supply chain funded by WRAP	Encourage female employment
		96.2% of customer satisfaction feedback	Entered in partnership with a TSO to site their clothing banks at 72 retail stores; 50% share goes to New life		
		Stocking locally sourced products support smaller suppliers and strengthen their relationship with communities			
		Learning events and training	Establish partnership with T4 to distribute to the people in food poverty		
	R8 (re-use)	Zero to landfill and waste prevention as key objective	WRAP funded project of waste prevention in partner with the fresh food suppliers	Working in partnership with food supplier on preventing waste in the supply chain funded by WRAP	Encourage female employment
		96.2% of customer satisfaction feedback	Partnered with salvation army to site their clothing banks at 72 retail stores		
			Committed to increase work within charities and distribute surplus food to people and communities suffering from food poverty		
	R1 (recycling)	Conduct full LCA	Support WRAP to reduce UK hh food and drink waste, grocery product and packaging waste	-	-

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		In 2011, introduced a feedback panel 'every day expert' which evaluated that 81% of customers care about being green of which 51% say they care "a lot" or "very much"	2013 partnership with T4 to divert surples food to charity it will provide 3.75m additional meals to their network charities		
		regular sustainability discussion with government and non government organisations for their feedback on progress	Working with a University in UK to create more sustainable products and to help reduce food waste. It will also entail in developing tool for large scale behaviour change among customers towards reducing food waste		
		Green room network or green champions for internal feedback	Sustain and save exchange already identified over £1.1m of saving for each supplier		
		Since 2005, diverted 96.5% food waste from landfill	In 2012, Love food, hate waste managed to reach over 10m customers		
		Sustain and save exchange provides information, ideas, a platform to share and exchange sustainable ideas	Working with food and drink federation and institute of grocery distribution to find ways to reduce waste both in store and customers home		
		Since 2007 packaging weight fall by 27%			
	R1 (re-use)	'sustain and save exchange' online tool share best practice and identify opportunities for increasing resource efficiency	With 'love food, hate waste' campaign managed to reach over 10m customers	-	-
		Moving 'use by date' to 'best before' dates to help reduce waste	Partner with T4 provides additional meals to their		
		In 2011, introduced a feedback panel 'every day expert' which evaluated that 81% of customers care about being green of which 51% say they care "a lot" or "very much"	Working in partnership with a University in UK to change the behaviour of customers towards sustainable food waste		
		regular sustainability discussion with government and non government organisations for their feedback on progress			
		Green champions for internal feedback			
	R8 (recycling)	Reducing waste and reducing packaging the priority. Signatory to WRAP Courtland 2	Long-term relationship with suppliers	Suppliers audit	Expect suppliers to meet ETI base code
		Regular feedback from the suppliers with response rate of 54% in which 80% with positive response	signed voluntary agreement with industry body IGD to play role in recycling target		
		Employee survey shows 2/3rd feel proud to work here			A diverse business with diverse customers and diverse staff. Also encourage disables to work
		Forum for the future and other stakeholders provide feedback in the yearly basis		Waste targets reported on weekly basis	
		Recycle around 300,00T of cardboard a year and around 22,000T of plastic which mostly turn into bin liners			
		Since 2007, reduced packaging by 15%	In 2009, Buy One, Give One UK business donated school uniform to 12000 children in Kenya		
		Since 2009, prevented 1600T plastic going to landfill			
	R8 (re-use)	Regular feedback from the suppliers with response rate of 54% in which 80% with positive response	UK hanger recycling programme prevented 1600T of plastic as hangers left at checkout are either re-use or recycled	Suppliers audit	A diverse business with diverse customers and diverse staff. Also encourage disables to work
		Employee survey shows 2/3rd feel proud to work here		Waste targets reported on weekly basis	
		Forum for the future and other stakeholders provide feedback in the yearly basis			
	R9 (recycling)	Food waste prevention scheme	"Great taste less waste" in collaboration with WRAP "love food hate waste" programme contributed to 1.1mT reduction in HH food waste	Independent assurance and 3rd party view	Equality and diversity policy
		Aim to limit the amount of packaging in signatory with Courtland commitment			
		Feedback from stakeholders, employers, customers, local communities	Work with T4 to help tackle any potential food waste within supply chain		

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		Colleague opinion survey with 90% response rate	Started working with Organisation shop that takes food with incorrect label, damages cases or packaging design issues and sell them in discounted price. This avoids loss of food		
		Food waste communication to customers both in store and online			
		Remove the "best before" dates from fruits and vegetables to let customers judge on their own which help in reducing food waste			
		Consistence roll out labelling scheme across products to ensure clear advice about recycling (2011)	Working with local authorities to promote recycling by opening 4259 recycling banks in stores and parking		
		In Wales in 2011 reduction in carrier bags to 80% due to compulsory regulation for charging 'single bag use'			
		4% reduction in packaging from 2009 to 2010	In 2011, clothing banks donated 3425T, 251T of Christmas card donated, redundant their uniform 20T donated		
		reduce in carrier bags usage by 0.9% despite of 37 new stores			
		In 2011 94.thirty-six% waste diverted from landfill			
		Provide advice support and share best practice with DEFRA			
	R9 (re-use)	Encourage customer re-use through take back scheme	'love food, hate waste' campaign lead to 1.1mt decrease in food waste among HH	Independent assurance and 3rd party view	Equality and diversity policy
		Zero waste to landfill policy			
		Progress in Courtland 2 commitment of packaging reduction	In 2011 donated 3425T clothes		
		'Charging for bags' regulation of Wales has reduced carrier bag usage by 80% as at April 2012	Partner with T4 to tackle any food waste within supply chain		
		Cut food waste at home communication message to the customers			
		Introduced 'bags for life' made of recycled plastic to encourage customer re-use.			
		Feedback from stakeholders, employers, customers, local communities			
		Colleague opinion survey with 90% response rate			
	R10 (recycling)	Food waste diverted from landfill	WRAP funded supply chain project launched for all food suppliers to reduce waste and energy consumption	Selecting suppliers with responsible and sustainable sourcing policies	-
		Winner of 2013 AD and Bio gas association for innovation in food collection	Focus on stakeholders engagement creating pubs with recycled waste value reduced 5% GW bins		
		Activity save 6903T of carbon enough to power 355 UK homes for a year	Cooperation with major meat supplier on delivery saved 120,000 cardboard boxes a year		
	R10 (re-use)	-	Partnered with supplier to develop returnable packaging solution saving 12000 cardboard boxes a year	Selecting suppliers with responsible and sustainable sourcing policies	-
	R11 (recycling)	Focus on how we deal with our waste	Committed to participate fully in the voluntary food service and hospitality agreement drawn by WRAP that aims to reduce waste, optimise packaging and increase recycling	Use in-house test purchase to monitor compliance	-
		172 sites are diverting 100% waste from landfill. 72% are diverting 80% waste from landfill			
		collected 19% more used oil from last year for recycling into bio-diesel			
		Employee engagement through survey increased from 67% last year to 71%			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
	R11 (re-use)	Employee engagement through survey increased from 67% last year to 71%	-	Use in-house test purchase to monitor	-
Construction	C2 (recycling)	Follow UK waste hierarchy site by site to reduce waste.	Collaborative bid success, obtained funding from Business, Innovation and Skills.	Effective risk management	Offer training and volunteering opportunities to increase employment for diverse workforce.
		Engage with employees through road shows and feedbacks, costumers through satisfaction surveys and community through Considerate Constructors Scheme.	Donated around 185,486 man-hours for community work and raised fund of around £113,028 for charity partner.		
		Commitment to share best waste practice extends to suppliers and subcontractors.	Partnership agreement with T5, signatory to the WRAP half waste recycling.	Independent assessment of management system.	
		In 2012-13 re-used: 39.4%, recycled and recovered: 31.2%, disposal went up by 2.4%.			
		In 12 months 477T waste wood either re-used or recycled.			
	C2 (re-use)	Follow standard GRI disclosure: re-use, recycle, recover, compost, incinerate and landfill	In 12 months 477T of wood waste went to T5 either for re-use or recycling	Effective risk management	Offer training and volunteering opportunities to increase employment for diverse workforce.
		In 12 months 477T waste wood either re-used or recycled.	'ray walk recycling centre' scheme in partner with Islington council provides affordable re-usable furniture and electrical items to local people and reduce waste from void clearance	Independent assessment of management system.	
		Engage with employees through road shows and feedbacks, costumers through satisfaction surveys and community through Considerate Constructors Scheme.			
	C1 (recycling)	Minimise waste to landfill		Performance development review of employees	Promoting equality and diversity through policy and principles. 21% female employees in 2012 as compared to construction industry average
		Customers gave average of 8.5 score on environmental			
		Employee engagement survey to receive feedback, also include focus group	£109,501 raised by 193 employees for chosen charities		
		1859T of materials diverted from landfill in 2012	In 2012, re-use of materials helped to improve relationships with local communities and charities and enhanced sustainability of supply chain		
		LOGOC reclaimed 90% of materials installed by direct subcontractors for re-use and recycling			
		Promote tool box talks for guidance			
		In LOGOC 99% of re-use and recycling achieved remain 1% sent for energy from recovery	In 2012, fit out team donated 30T of furniture to charitable organisations and social enterprises		
	C1 (re-use)	Minimise waste to landfill enhanced within waste policy with promoting re-use	1859T of charitable donations and re-usable programmes	Performance development review of employees	Promoting equality and diversity through policy and principles. 21% female employees in 2012 as compared to construction industry average
		Zero waste to landfill	Donated over 30T of furniture to charitable organisations		
		1859T of materials diverted from landfill in 2012 though charitable donations and re-use programme	Improvement in re-use networking with organisations dealing with materials including timber, plywood, doors, furniture, trees and carpets.		
		SWMP and produce resource management plans to highlight the end use of materials used on site	During 2012 diversion of re-usable materials to organisations built the sustainable partnership within supply chain		
		Put measures to maximise the re-use opportunities such as: waste stream segregation, re-use storage, take back and rental scheme			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		Customers gave average of 8.5 score on environmental performance			
		Employee engagement survey to receive feedback, also include focus group			
	C3 (recycling)	75% employee completed global employee engagement	strong relationship or partnership with stakeholders, supply chain, government, public authorities and industry bodies	track and report environmental performance	diverse group (performance and governance) with 32% of employees are women
		stakeholders engagement or feedback for improvements			
		Community engagement for feedback			
		Formal feedback and enquiry handling in place which gets communicated to the board in annual basis		independently assess green rating	
		Implemented green office guides that focuses on environmental areas	Leading the way through partnership that generate real environmental change		
		By 2011 decrease in around 50% waste generation since 2008		pre-assessment of suppliers	
		In 2011, Largest decrease of 60% waste in Europe and Middle East			
	C3 (re-use)	Clear guidelines on life cycle of products	-	track and report environmental performance	diverse group (performance and governance) with 32% of employees are women
		75% employee completed global employee engagement survey			
		stakeholders engagement or feedback for improvements		independently assess green rating	
		Community engagement for feedback			
		Formal feedback and enquiry handling in place which gets communicated to the board in annual basis		pre-assessment of suppliers	
Waste services	W3 (recycling)	Zero waste target a driver in LOGOC games	In LOGOC W3 identified wide variety of re-use and recycling organisations, items send for re-use are Geomembrane, artificial glas, banners, flags, carpet, costumes and sand bags	tracking vehicle and driver performance, changing driver behaviour improving and maintaining vehicle	-
		Full compliance with current laws and legislations (awarded the Carbon Trust standards, certified ISO 14001 and 9001)			
		During the development phase of refuse transfer station liaison/received feedback from local residents and businesses around	Give and gain day' re-used 18T of recycled wood chips to generate a mile of woodland walking Starford-Upon-Avon		
		Focused on implementing initiatives to improve employee engagement			
		Developing innovate active and creative solutions to WM with	With 'giving something back' as a motto build stronger relationship with communities where W3 operates		
		In LOCOG around 62% of total waste went for re-use, recycling and composting			
		Use of existing welfare facilities during construction of new refuse transfer station avoided additional water and electricity supply	New partnership with a TSO to identify opportunities for community recourse organisations to be involved in delivering waste and resource management services (TSOs)		
		Published reports 'Driving green growth: role of WM industry and circular economy' and how waste and resource management sector could generate additional social value			
		Training via e-learning opportunities	Raised money for charity		
	W3 (re-use)	Promote bottle re-use through road shows 'reduce your waste, re-use this bottle'	Scrap stores collected materials for schools, community groups and art projects to re-use	tracking vehicle and driver performance,	-

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		Road shows staff handed 4000 re-usable drink bottles to commuters with message 'reduce your waste re-use this bottle'		changing driver behaviour improving and maintaining vehicle	
		Circular economy promotion			
		In LOCOG around 62% of total waste went for re-use, recycling and composting			
		During the development phase of refuse transfer station liaison/received feedback from local residents and businesses around			
		Focused on implementing initiatives to improve employee engagement			
	W4 (recycling)	Look at the cost and carbon impact of whole supply chain. Landfill diversion commitment lies in 'no own landfill sites'	Working closely with customers to optimise their sales	Regular review of key risks to the operations	Employee encouragement through 'own it' programme aligned with core values
		Policy of implementing EMS on each sites and have ISO 14001 certification			
		Conducted employee survey with 87% response rate		A confidential reporting by employees through concern helpline and email	The foundation supported external organisations in work placement of disadvantage young
		Result of 'own it' programme, 75% responded that value have been communicated clearly and 79% feel clear direction for their behaviour	Engagement with and between our employee and community by enhancing charitable activities		
		Replacement of plastic based materials by sustainable fibber based			Meeting labour rights and human rights matter
		Waste sent to landfill per kg/t down by 6.8%			
	W4 (re-use)	Waste to landfill decreased by 6.8% through activities in paper mills which have been re-using and recovering	-	Regular review of key risks to the operations	Employee encouragement through 'own it'
				A confidential reporting by employees through concern helpline and email	The foundation supported external organisations in work placement of
					Meeting labour rights and human rights
	W2 (recycling)	Zero waste to landfill and follow UK EU waste hierarchy	£1.5b investment programme to build energy efficient recovery facilities	Performance appraisal process	Increase gender diversity
		Customer, community and stakeholder feedback and dialogue through online incident management system	W2 degree programme in partnership with a University in UK with 42 young managers enrolled		
		10 education centres in UK to promote best practice in waste prevention	Circular economy task force, a collaborative project supported by government and managed by a TSO	Customers demand evidence of sustainable performance as part of their supply chain	
		open door policy' visit from community groups and interested parties			
		No. of programmes to show the expertise and skills of employees	In 2012 provided £10.5m of funding for community amenity and environmental projects. 275 projects were supported which estimates to around 200,000 people benefitted		
		Material recovery for re-use and recycling increased by 1mt from 2011 to 2012			
		Proportion of material recovered for recycling relative to waste input increased by 9%		self-assessment	

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
	W2 (re-use)	Follow the principles of circular economy including high level of re-use and recycling	-	Performance appraisal process	Increase gender diversity
		Increased volume of re-use, recycling and recovery to 2.6mt in 2011/12		self-assessment Customers demand evidence of sustainable performance as part of their supply chain	
		Education on 10 centres across UK to promote better understanding and best practice in prevention, recycling, recovery, resource management and sustainability			
		Customer, community and stakeholder feedback and dialogue through online incident management system			
		10 education centres in UK to promote best practice in waste prevention			
		open door policy' visit from community groups and interested parties			
	W1 (recycling)	Turning waste into recourse	Worked with hotels and restaurants in 2012 to divert 93% of waste from landfill	Drive sustainability through supply chain set sustainability targets and perform audits	Diversity and inclusion with 91 nationalities working
		In 2012 achieved 70% employee satisfaction score through employee engagement survey	Strong relationship with customers an example is 25 years contract with a City Council as part of contract we will build an advance recycling and recovery facility which will create 300 jobs during construction and 45 permanent positions		
		Customer service index to receive their feedback			
		Engaging with suppliers via face to face meetings, surveys, training or workshops to improve satisfaction rate to 66%	Using landfill tax credits fund community groups and organisations for local heritage and environment conservation operations		
		3.3% reduction in landfill emission in 2012 since last 3 years			
		Over last few years invested £260m in new facilities	In 2012 partnership with a TSO to donate used paints via repaint scheme		
		Innovating in recovery and sorting			
		Aim is to use our expertise to educate and inform public on ways to reduce waste	Also teamed up with restore jointly diverted 67T of furniture to go back into people's home		
	W1 (re-use)	Turning waste into recourse	In 2012 involved in no. of projects including restoring furniture and recycling paint developed infrastructure skills	Drive sustainability through supply chain set sustainability targets and perform audits	Diversity and inclusion with 91 nationalities working
		To educate and inform why reduce waste			
		In 2012 achieved 70% employee satisfaction score through employee engagement survey	16000L paint was distributed to the charities free of cost to date 160 voluntary organisations have signed up		
		Customer service index to receive their feedback	Diverted 67T of furniture in peoples home		
		Engaging with suppliers via face to face meetings, surveys, training or workshops to improve satisfaction rate to 66%	Partnered with a TSO in Nottingham to collect re-usable, leftover paints from individuals and communities		
Manufacture	M2 (recycling)	Environment policy, EMS and ISO certification in place	Strong local commitment	Risk management system in place	The group is against any kind of discrimination due to age, gender, race, religion and actively aims to strengthen internal diversity
		Community engagement and appropriate dialogue through "open day" events	cofounding activities for vulnerable and young people		
		Bi-annual employee perception survey		Performance reviews	
		From 2005 to 2011 4% decrease in waste		Pre-assessment of new suppliers (environmentally and socially responsible)	
		Around 28% of raw material are recycled content			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
	M2 (re-use)	Community engagement and appropriate dialogue through "open day" events	-	Risk management system in place	The group is against any kind of discrimination due to age, gender, race, religion and actively aims to strengthen internal diversity
		Bi-annual employee perception survey		Performance reviews	
				Pre-assessment of new suppliers (environmentally and socially responsible)	
	M3 (recycling)	Long-term vision of zero waste	Partnering with organisations to create a market for	Examine value chain more deeply	Human and workplace rights
		Awarded Carbon Trust Standards and ISO certified	In 2011 partnered with R1 to promote recycling		
		Stakeholders, employee, customers and suppliers engagement	Invested in 'on the go' recycling to encourage people to think about material can put to a second use		Established a diversity council
		29% reduction in packaging since 2007			
		99.9% of manufacturing waste is recycled	Yearly 'Live positively week' for employees		
		Launched a website that provides information for customers to understand life cycle of each stage	92,340 plastic bottles swapped for 9000 items of limited edition festival, collecting in total 18T on plastic bottles and cans		
		130 recycle zones collecting over 338T of recycle since 2008			
		Eliminating landfill waste by educating and investing in recycling programme	1% increase in selling of recovered bottles and cans from 2009 to 2011 supported recovery programme		
	M3 (re-use)	Long-term vision of zero waste	Partnering with organisations who produce recycled PET plastic giving used bottles a second life	Examine value chain more deeply	Established a diversity council
		Encourage people to think about re-using materials			
		Stakeholders, employee, customers and suppliers engagement for opinions			Human and workplace rights
	M4 (recycling)	No waste to landfill maximise re-use by moving up the waste hierarchy	Worked closely with customers and WRAP under Courtland Commitment	Employee's individual performance measured (Pride performance review)	Diversity and disadvantage group into employment
		Engage with local community group for feedback to improve	Suppot T4 to feed people with food poverty		
		Around 57% decrease in landfill disposal from 2007 to 2011	Work and engage with several charities to support and develop young people	thirty-six0 degree feedback	
	M4 (re-use)	No waste to landfill maximise re-use by moving up the waste hierarchy	Support T4 to provide food to needy	Employee's individual performance measured (Pride performance review)	Diversity and disadvantage group into employment
		Engage with local community group for feedback to improve		thirty-six0 degree	
	M5 (recycling)	ISO certification and promotion of re-use and recycling to reduce packaging waste	Engagement with customers, employees and suppliers to create awareness of CSR issues to reduce environmental and community impact	Changing procedure and mindset related to packaging of whole supply chain	Promote diversity
		Feedback received from stakeholders and employees for views	Partnership with United Nations Industrial Development Organisation (UNIDO) to further reduce environmental footprint	Self-assessment and performance measure in place	
		Sharing best practice through guidelines, e-learning etc.			
	M5 (re-use)	Promote re-use and recycling target to reduce packaging	-	Changing procedure and mindset related to packaging of whole supply chain	Promote diversity
		Sustainable packaging programme build on 4 principles: reduce, re-use, recycle and rethink			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		Increase re-use of packaging with main focus on glass bottles		Self-assessment and performance measure in place	
		Feedback received from stakeholders and employees for views and opinions			
	M6 (recycling)	Reduce, re-use, recycle	Working with WRAP to reduce waste, support 100% recycling and zero landfill	-	-
		100% recycling in 2011			
		Initiative for reducing 97% supply chain waste			
		Initiate good office practice with guidelines			
		New eco-pack eliminates glass and saves 97% packaging	Work closely with a TSO for saving second-hand shoes going to landfill		
		Exploring possibilities to re-use 'off-cuts' tea bag paper			
		Annual saving of 348T of primary cardboard and save 460T co2 every year			
	M6 (re-use)	Eliminate packaging and go for 3 R's	2nd home to old safety shoes	-	-
		Zero landfill			
		Reduce paper usage by 10% by 2012			
		Save 97% packaging through own new eco-pack that eliminates glass			
		Annual saving of 348T of primary cardboard and save 460T co2 every year			
	M7 (recycling)	ISO certification and promotion of energy saving and waste reduction (design products with recycling in mind)	Engage with local community and residents for support of vulnerable, youth development and environmental protection. It builds a relationship of mutual trust	Environment performance improvement, regulatory compliance measure in whole supply chain	Diversity promotion group
		Listen to variety of opinions form stakeholders and community for improvement			
		Green procurement guidelines and environmental education to employees		Environmental awareness maintenance at each level	
		In 2011, 24% re-use, 41% recycling sold, 59% recycling paid, 0.1% incineration and 0% landfill	Educate employees to participate in the environmental activities with community and other organisation in voluntary basis		
		An innovative idea introduced in 2011 for eliminating disposal packaging which reduced the volume of disposable packaging per sales unit by 13% compared to 2010		Internal environmental audits	
	M7 (re-use)	Calculate internal re-use and develop technology to expand re-use of high polymer materials	-	Environment performance improvement, regulatory compliance measure in whole supply chain	Diversity promotion group
		Reduce the volume of packaging waste by 13% compare to 2010 by re-using returnable containers		Environmental awareness maintenance at each level	

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
				Internal environmental audits	
		Listen to variety of opinions form stakeholders and community for improvement			
	M8 (recycling)	Zero waste to landfill pledge	Take responsibility for end-of-life for our product or our competitors which makes easy process for customer to recycle.	Measure against ourselves	-
		UK's Sunday times Green list 3 straight years			
		Design innovative product that minimize environmental impact	Support National and 3rd party carpet reclaim initiatives		
	M8 (re-use)	Zero waste to landfill pledge	Support national and 3rd party reclaim initiatives	Measure against ourselves	-
	M9 (recycling)	Waste = Food	To achieve cradle to cradle commitment rigorously assess materials in partnership with a TSO	Require supplier declaration regarding sustainability of product	Celebrate diversity
		Take back and recycle and closing the loop			
		Information on sustainability measurement tool			
		100% recycle of pure textile manufacture waste			
		In 2011, 88% of packaging materials recycled			
		Carpets are recycled through 'take back' programme by using innovative technique		Certifications achieved helps to measure the achievements	
		Environmental production declaration (EPD) a communication tool based on LCA			
		Rigorous cradle to cradle road map that sets out every progress		encourage clients to manage their positive environment foot print	Human rights
		Fair labour statement			
		Offer customers choice to the 'look and feel', quality, performance, environmental impact			
	M9 (re-use)	Future plans for cradle to cradle approach includes supporting re-use or recycling of materials at the highest possible level of quality	-	Require supplier declaration regarding sustainability of product	Human rights
		Environmental production declaration (EPD) a communication tool based on LCA		Certifications achieved helps to measure the achievements	
		Cradle to cradle road maps			
		Fair labour statement		encourage clients to manage their positive environment foot print	
		Offer customers choice to the 'look and feel', quality, performance, environmental impact			
	M1 (recycling)	Maximise the efficient use of raw materials by reducing, re-	Stakeholder engagement is long-term	Regular monitoring and review of sustainability performance	respect the rights of employees
		4 R's reduce, renewable, re-use and recycle			
		In 2012 internal stakeholders, customers, government, environmental non-governmental, suppliers, unions, communities and industry associations involvement through several feedbacks			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		Staff awareness regarding sustainability policy	Engagement with suppliers to reduce environmental impact		
		Materials sent to landfill increased from 2011 to 2012		Promote sustainability throughout the supply chain	
		In 2012, re-used and recycled more than 79%			
		Focus on finding innovative solutions for increasing re-use and recycling through materials like carpet, foltex tiles, entrance system, vinyl and marmoleum	Engage with community by transparently communicating environmental impacts		
		In 2012 Sep. Introduced "back to the floor" scheme which involves taking back off-cuts and reprocessing them			
		In 2012 re-used 3T of Flotex			
	M1 (re-use)	Consider waste recycling or re-use to evaluate the raw materials used for flooring	-	Regular monitoring and review of sustainability performance	respect the rights of employees
		4r's are the heart of effort to reduce environmental impact			
		In 2012, re-used 3T of installation waste in manufacturing process			
		Define difference between re-use and recycle		Promote sustainability throughout the supply chain	
		Focus in finding innovation solutions aimed at re-use and recycling			
		In 2012 internal stakeholders, customers, government, environmental non-governmental, suppliers, unions, communities and industry associations involvement through several feedbacks			
Charities/TSOs	T1 (recycling)	Follow principles of 4Rs (reduce, re-use, repair and recycle).	Strengthen donor relationship.	Built partnership through pre-assessment process.	Humanitarian and strategic aims based on fundamental human rights.
		Community involvement and raising waste reduction awareness.	Collaboration with one of the food retailers where they have 460 banks in 300 premises.		
		New- Look Shop approach, a way of marketing.		Internal control and risk management system in place for measuring performance.	Equal opportunities policy, training, targets and practical actions.
		Over a year more than 3.8m items were shwopped raising £2.3m.			
	T1 (re-use)	Follow principles of 4Rs (reduce, re-use, repair and recycle).	R6 donated approx. £3.2m charitable clothing	Built partnership through pre-assessment process.	Humanitarian and strategic aims based on fundamental human rights.
		Over a year more than 3.8m items were shwopped raising £2.3m.			
		Communication about carbon benefits and donated sales		Internal control and risk management system in place for measuring performance.	Equal opportunities policy, training, targets and practical actions.
		New look shop launch 'more of rethink than refit' to exemplify new retail look			
		Community involvement and raising waste reduction awareness.			
	T2 (Recycling)	Reduce, re-use, recycle	conducted 15 Give and Take event in 2012 in partnership with 10 clients in which around 23.4T of furniture, goods and bric-a-brac were re-used	-	-
		In 2012, saved 162T of re-usable goods and materials from going to landfill			

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		82T paint collected from 8 re-use, recycling centres and commercial organisations through a TSO of which 67T redistributed to 159 organisations and 1997 individuals for re-use. It saved community about £192K and avoided an estimate of £34K going to landfill	Received a funding of £75k from T10 to expand paint re-use project		
	T2 (Re-use)	Reduce, re-use, recycle	Secured £105k funding to grow paint re-use project	-	-
		Managed to save 162T of re-usable materials going to landfill	The paint place and give and take project saved more than £210K providing low-cost or free goods		
		Received funding of £75k from T10 to expand paint re-use			
		Organised 'get up-cycling', a furniture recreation competition to encourage people about re-use possibilities	The paint place redistributed £192K of paint from 8 re-use and recycling centres to commercial, individual and organisations		
			The give and take project enabled people to re-use around 23.4T of furniture, bric-a-brac, goods and addition 11T outside this event		
			Social role through community engagement, volunteer development and help people to obtain cheap re-usable goods		
	T3 (recycling)	Recude, re-use, recycle, recover	It is funded by WRAP and BRE Trust	3 times a year monitoring and discussion	-
		Diversion of flooring waste from landfill	It's an umbrella body which brings industry and government together at one place. Trade association involve production, distribution, installation, recycling, reprocessing and disposal of flooring as well as relevant government departments, independent bodies, regulatory agencies and research organisations		
		Flooring waste website for information, flooring waste reporting tool and FSP guidance document			
		Carpet waste diversion rate from landfill increased from 10% in 2010 to 16.5% in 2011			
		Compared to 2010 carpet tile re-use increased by 86% in 2011			
		95.5% packaging waste diversion from landfill within resin flooring industry in 2011			
		Manufacturing members reduced vinyl waste manufacturing to			
		Have membership survey to receive direct feedback from organisations			
	T3 (re-use)	Emphasis the waste hierarchy of re-use, recycle and recovery	-	3 times a year monitoring and discussion	-
		Carpet tile re-use increased by 86% in 2011 compare to 2010 with over 800,000 tiles re-used			
		Flooring website running providing appropriate WM facilities			
		Have membership survey to receive direct feedback from organisations			
	T4 (recycling)	Ensuring good food is not wasted	Support 910 charities an increase in 26% from 2012 to	regular consideration of risks	-
		Conducted 2012 National Impact Survey from charities working with	Great voluntary opportunities for the food distribution		
			Long-term relationship with R6 and strong relationship with R8 and R1		
		Diverted 88% of food waste from going to landfill in 2012 saved 1850T of co2 emissions	In Oct 2012 ran an appeal with R6 which raised 220T of food and R6 made a donation of £250,000 as it helped them to divert 638T of food waste		

Type	Categories / Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
			In Dec 2012 conducted a 'National food drive' with R8 and a TSO which raised 377T of donated food		
		Saved each charity on average £13,000 a year	R1 is committed to divert a 1500T to T4 in 12 months		
		Promoting a key message of 'no good food should be wasted'	Waste not want not' activity with a charity in London in collaboration with a food chain that diverted 49T of food from landfill		
Other Services	T4 (re-use)	Ensuring good food is not wasted	Support 910 charities an increase in 26% from 2012 to 2013	regular consideration of risks	-
		Redistributed 4200T of good quality food (88% of food diverted from landfill			
		Fighting food poverty by tackling food waste	Total saving for charities over 11m		
			Food distribution by volunteers provide them training and skills		
			Received donation from R6 of £250,000		
			Partnered with R8 and a TSO and raised 377T of donated food in 2012		
		Conducted 2012 National Impact Survey from charities working with	'waste not want not' in partner with a food chain in London		
	O1 (recycling)	One to one meeting, surveys, feedback	Concentrate on building local relationships to fulfil local community needs	-	Employee engagement
		Reduction in waste to landfill in UK bus division and 5% reduction in UK rail			
		In 2012, Waste recycling rate went up by around 9% from 2011			cultural change a pivotal to the success
		Small changes, Big difference' campaign won environment award at UK bus awards in cutting energy use and improving recycling	Close collaboration with vehicle manufacturers		
		Publications and forums to communicate			
	O1 (re-use)	One to one meeting, surveys, feedback	-	-	Employee
					cultural change a pivotal to the success
	O2 (recycling)	Employee engagement through forum and surveys	-	Work with suppliers whose values and standards are aligned with social, environmental and economic impacts	Diversion and inclusion
		Maintaining regular dialogue with stakeholders and participate in industry wide survey			
		Investment properties 83% diversion of waste from landfill in 2012 38% more since 2010			
		Recycled 78.45% waste in occupied properties, 13% increase since 2010			
	O2 (re-use)	Maintaining regular dialogue with stakeholders and participate in industry wide survey	-	Work with suppliers whose values and standards are aligned with social, environmental and economic impacts	Diversion and inclusion
		Employee engagement through forum and surveys			
	O3 (recycling)	Zero waste to landfill	Work with suppliers in the majority of key impact areas		-

Type	Categories Organisations	Communication	Engagement/ Action	Behavioural Maintenance	Avoidance of value action gap
		58% reduction in office waste arising in 2012	Staff and community engagement such as O3 sustainability Day in which one of the events was 'paper less challenge' by asking staff to make changes to reduce office paper use. Also introduced swap shops for unwanted books, clothes etc. Events encouraged closer relationship with local charities and community organisations	Measure sustainable procurement performance against internal and community initiative	
		Sustainable Development Action Plan (SDAP) in consultation with staff, suppliers and clients			
		Focused review of stakeholders for their engagement		Supplier engagement to benchmark their performance	
		Building waste diverted from landfill by 72.2% in 2012 from 2.3% in 2011			
	O3 (re-use)	Promote re-use or recycling of IT equipment and Zero waste to landfill	'sustainability day' arranged swap shops for unwanted books, clothes etc.	Measure sustainable procurement performance against internal and community initiative	-
		IT equipment refresh across the business resulting in re-use/recycling of IT equipment			
		Sustainable Development Action Plan (SDAP) in consultation with staff, suppliers and clients		Supplier engagement to benchmark their performance	
		Focused review of stakeholders for their engagement			
	C4 (recycling)	aim to use resources effectively and minimise waste	Partner with organisations that practise sustainability	SPeAR assessment helping clients to create sustainable improvement	Developing diversity
		Office real time a data visualisation tool to guide sustainability related behaviour change		Monitoring of paper use in all offices	
		Enable the exchange of ideas and promotion of sustainability with partners	Fund and work on community projects that achieve sustainability goals	evaluate projects with respect to their sustainability risks	
	C4 (re-use)	aim to use resources effectively and minimise waste	-	SPeAR assessment helping clients	Developing diversity
		Enable the exchange of ideas and promotion of sustainability with partners		Monitoring of paper use in all offices	
				evaluate projects with respect to their sustainability risks	

Box 9.1: Steps for using Nvivo 10 (Content analysis)

Step 1: Create a new project in Nvivo 10

A new project is created.

Step 2: Record and store reports

The reports are imported and stored with the Nvivo software file. In Nvivo, the imported materials are represented as *"Source"* where sub folders are created for each sector, that is; Retailers, Manufacturers, Construction, Charities/TSOs, Waste services, and Others. As an example, Figure 9.1 below provides a snapshot of one of the sub-sections of *"Source"* (in this instance, Retailer).

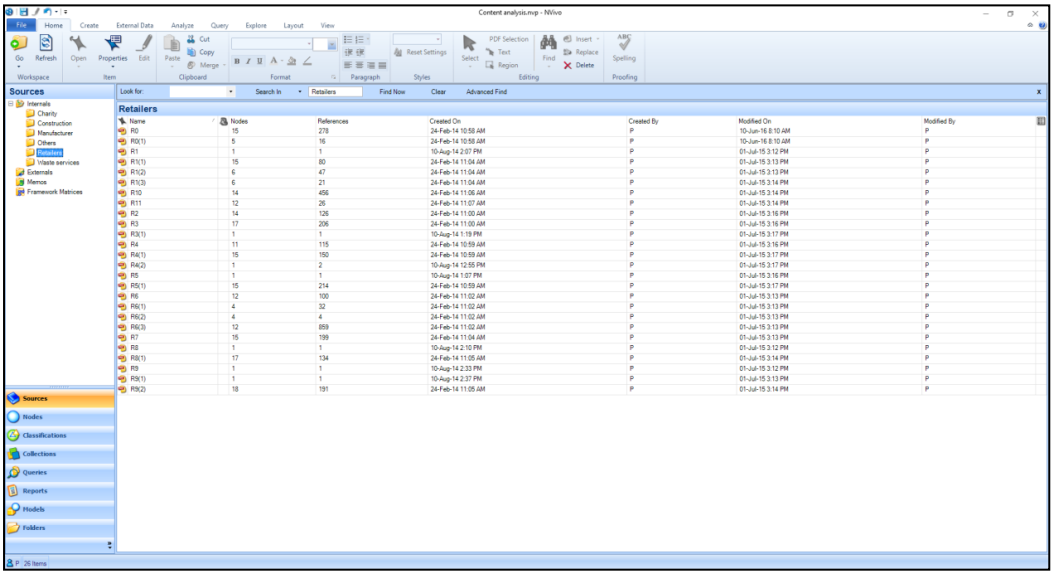


Figure 9.1: Nvivo Source

Step 3: Create Nodes

For the purpose of this study, the term 'node' in Nvivo is represented by CEBA categories. Considering the categories and variables of the theoretical framework (CEBA), the main *"nodes"* formed are Communication, Engagement/Action, Behavioural maintenance, and Avoidance of the value action gap; followed by subsidiary nodes or variables, wherever applicable. As an example, Figure 9.2 below provides a snapshot of the Behavioural maintenance node and its variables (in this example, Regular monitoring and Measuring).

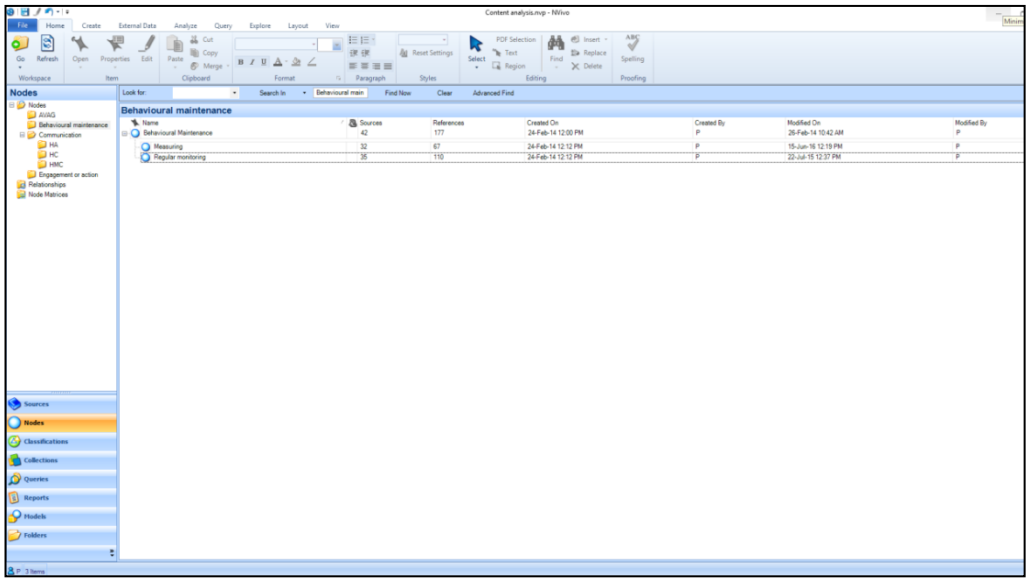


Figure 9.2: Nvivo Node

Step 4: Coding

The reports are analysed to identify the main concepts and themes that are related to the nodes. In Nvivo *"Text search"* and *"Word frequency"* are the two commands used for coding purposes.

Words or phrases are typed in the search section of commands, which automatically extracts the actual words or/and synonyms (depending on what researcher asks for) from the sources to codify them into nodes.

As part of the process, the tool also provides the references from where it extracts the data, so that the researcher is able to go through and code relevant data and void any invalid data.

The coding of each category of the theoretical framework (CEBA), is elaborated in Chapter 5, which indicates the evidence of re-use and recycling behaviour among the studied organisations.

Box 9.2: Steps for using Nvivo 10 (semi-structured interviews)

Step 1: Create a new project in Nvivo 10

A new project is created.

Step 2: Record and store reports

The recorded and textual interviews and the recommended documents are imported and stored with the Nvivo software file. In Nvivo, the imported materials are represented as *"Source"*. Figure 9.3 below provides a snapshot of *"Source"*.

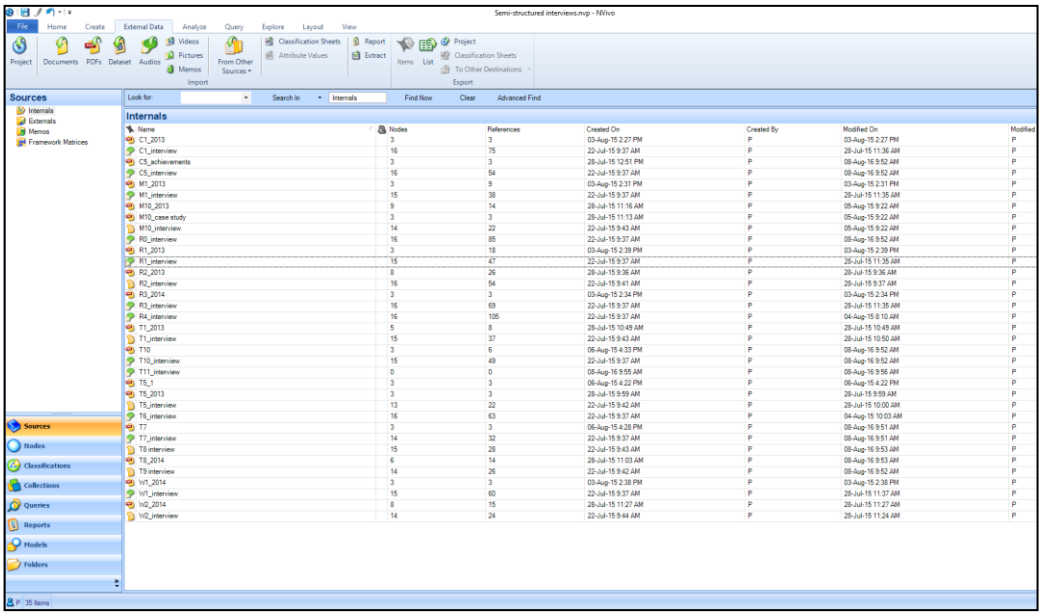


Figure 9.3: Nvivo Source

Step 3: Create Nodes

For the purpose of this study, the term node in Nvivo is represented by CEBA categories. Considering the categories and variables of the theoretical framework (CEBA), the main *"nodes"* formed are Communication, Engagement/Action, Behavioural maintenance, and Avoidance of the value action gap; followed by subsidiary nodes or variables wherever applicable. Figure 9.4 below provides a snapshot of nodes.

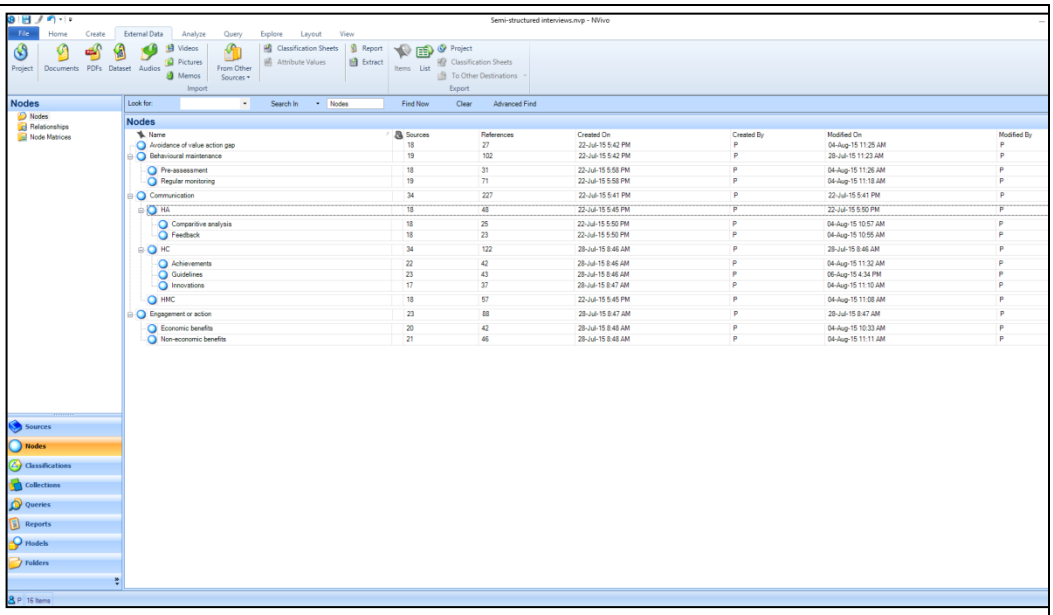


Figure 9.4: Nvivo Node

Step 4: Coding

The interviews are analysed to identify the main concepts and themes that are related to the nodes. In Nvivo. The imported audio-files appeared as Audio Wave Form which were listened to and divided up into audio-excerpts. In so doing, audio-excerpts were assigned 'Timespans', and then were assigned to the Nodes.

The second step was to create a 'Memo' - a short summary and initial analytical reflections linked to that particular 'Internal Source'. In so doing, the excerpts coded under each node was re-listened, whereby, one of the Nvivo features made it easy to return and listen to audio-excerpts, which that from within each Node a hyperlink opens the corresponding interview and highlights the relevant sections along the Audio Wave Form.

The coding of each category of the theoretical framework (CEBA), is categorised and elaborated in Appendix IV, Table 9.5 to Table 9.10, which indicates the evidence of re-use behaviour among the interviewed organisations.

9.3APPENDIX III

9.3.1 Content Analysis Evidence

This section demonstrates the process in which re-use and recycling evidence has been evaluated in the content analysis empirical study.

Content Analysis (Re-use evidence)																														
Categories	Communication												Engagement/action			Behavioural maintenance			Avoidance of value action gap										
Likert type items / Organisations	High means control	High attractiveness		High attractiveness	High credibility			High credibility	C		Non-economic	Economic	E	Regular monitoring	Pre-assessment	B	Diversity	Engagement/ action	Guidelines	A	Total	Percentage								
		Feedback	Comparitive analysis		Achievements	Guidelines	innovations																							
R0	3	3	3	3	3	1	3	2	3		4	5	5	3	3	3	1	5	1	3	14	92%								
R1	1	3	3	3	1	3	1	2	2		3	3	3	3	3	3	1	3	3	2	10	68%								
R2	3	3	1	2	1	1	1	1	2		1	1	1	3	3	3	1	1	1	1	7	47%								
R3	1	3	1	2	1	1	1	1	1		1	1	1	3	3	3	3	1	3	2	7	49%								
R4	3	3	1	2	3	1	3	2	2		5	5	5	3	3	3	3	5	3	4	14	96%								
R5	3	3	1	2	1	3	1	2	2		4	5	5	3	3	3	1	5	3	3	13	88%								
R6	1	3	3	3	3	1	3	2	2		4	5	5	3	3	3	3	5	3	4	14	91%								
R7	1	3	3	3	1	1	1	1	2		4	5	5	3	3	3	1	5	1	2	12	80%								
R8	1	3	3	3	1	1	1	1	2		1	2	2	3	3	3	3	2	1	2	9	58%								
R9	3	3	3	3	2	1	3	2	3		4	5	5	3	3	3	3	5	3	4	14	96%								
R10	1	3	3	3	1	1	1	1	2		4	4	4	3	3	3	1	4	1	2	11	71%								
R11	1	3	3	3	1	1	1	1	2		1	1	1	3	1	2	1	1	1	1	6	38%								
C1	3	3	3	3	3	3	3	3	3		4	5	5	3	3	3	3	5	3	4	15	100%								
C2	1	3	1	2	3	1	1	2	2		5	5	5	3	3	3	1	5	1	2	12	79%								
C3	1	3	3	3	1	1	1	1	2		1	1	1	3	3	3	3	1	3	2	8	53%								
C4	1	1	1	1	1	1	1	1	1		1	1	1	3	3	3	1	1	1	2	7	44%								
W1	1	3	1	2	1	3	1	2	2		4	5	5	1	3	2	3	5	3	4	13	84%								
W2	3	3	3	3	4	3	1	3	3		1	1	1	3	3	3	3	1	3	2	9	62%								
W3	3	3	1	2	3	3	1	2	2		3	1	2	3	3	3	1	2	3	2	9	62%								
W4	1	3	3	3	4	1	1	2	2		1	1	1	3	3	3	3	1	1	2	8	51%								
M1	1	3	1	2	3	3	3	3	3		1	1	1	3	3	3	1	1	3	2	8	51%								
M2	1	3	1	2	1	1	1	1	1		1	1	1	3	3	3	3	1	1	2	7	47%								
M3	1	3	3	3	1	3	1	2	2		1	2	2	3	3	3	3	2	3	3	10	64%								
M4	1	3	1	2	1	1	1	1	1		3	1	2	3	3	3	3	2	1	2	8	56%								
M5	3	3	3	3	1	1	3	2	3		1	1	1	3	3	3	3	1	1	2	8	55%								
M6	3	1	1	1	3	1	1	2	2		1	3	2	1	3	2	1	2	1	1	7	48%								
M7	3	3	3	3	4	1	3	3	3		1	1	1	3	3	3	3	1	1	2	9	58%								
M8	1	1	3	2	1	1	1	1	1		3	1	2	3	1	2	1	2	1	1	7	44%								
M9	3	3	1	2	1	1	1	1	2		1	1	1	3	3	3	3	1	3	2	8	56%								
T1	1	3	1	2	3	1	1	2	2		5	5	5	3	3	3	3	5	3	4	13	88%								
T2	1	3	1	2	3	1	3	2	2		5	5	5	3	1	2	1	5	1	2	11	74%								
T3	1	1	1	1	3	1	3	2	1		5	5	5	1	1	1	1	5	1	2	10	65%								
T4	3	3	1	2	5	1	1	2	2		1	1	1	3	3	3	1	1	1	1	7	50%								
O1	1	3	1	2	1	1	1	1	1		1	1	1	3	1	2	1	1	1	1	5	36%								
O2	1	3	1	2	1	1	1	1	1		1	1	1	1	3	2	3	1	1	2	6	40%								
O3	3	3	1	2	1	1	3	2	2		3	3	3	3	3	3	1	3	1	2	10	66%								

Figure 9.5: Content analysis re-use evidence

Content Analysis (Recycling evidence)																										
Categories	Communication											Engagement/action			Behavioural maintenance			Avoidance of value action gap								
Likert type items / Organisations	High means control	High attractiveness		High attractiveness	High credibility			High credibility	C		Non-economic	Economic	E	Regular monitoring	Pre-assessment	B	Diversity	Engagement/ action	Guidelines	A	Total	Percentage				
		Feedback	Comparitive analysis		Achievements	Guidelines	Innovations																			
R0	3	3	3	3	3	3	3	3	3		4	4	4	3	3	3	3	4	3	3	13	87%				
R1	3	3	3	3	4	3	3	3	3		4	4	4	3	3	3	1	4	3	3	13	87%				
R2	3	3	1	2	3	3	3	3	3		3	5	4	3	3	3	1	4	3	3	13	84%				
R3	3	3	1	2	4	3	3	3	3		4	4	4	3	3	3	3	4	3	3	13	84%				
R4	3	3	1	2	4	3	3	3	3		3	1	2	3	3	3	3	2	3	3	10	69%				
R5	3	3	1	2	2	3	3	3	3		2	2	2	3	3	3	1	2	3	2	10	64%				
R6	3	3	3	3	2	3	3	3	3		3	1	2	3	3	3	3	2	3	3	11	73%				
R7	3	3	3	3	1	1	3	2	3		4	5	5	3	3	3	1	5	1	2	13	84%				
R8	3	3	3	3	3	1	3	2	3		3	5	4	3	3	3	3	4	1	3	13	85%				
R9	3	3	3	3	4	3	3	3	3		4	4	4	3	3	3	3	4	3	3	13	87%				
R10	3	3	3	3	2	1	1	1	2		4	4	4	3	3	3	1	4	1	2	11	76%				
R11	3	3	3	3	4	1	1	2	3		3	1	2	3	1	2	1	2	1	1	8	53%				
C1	3	3	3	3	3	3	3	3	3		4	5	5	3	3	3	3	5	3	4	15	100%				
C2	3	3	1	2	2	3	1	2	2		4	4	4	3	3	3	1	4	3	3	12	82%				
C3	3	3	3	3	4	3	1	3	3		2	1	2	3	3	3	3	2	3	3	11	70%				
C4	3	1	1	1	1	3	1	2	2		3	1	2	3	3	3	3	2	3	3	10	66%				
W1	3	3	1	2	3	3	3	3	3		5	4	5	1	3	2	3	5	3	4	14	91%				
W2	3	3	3	3	4	3	3	3	3		3	4	4	3	3	3	3	4	3	3	13	87%				
W3	3	3	1	2	3	3	3	3	3		4	3	4	3	3	3	1	4	3	3	13	84%				
W4	3	3	3	3	4	1	1	2	3		3	1	2	3	3	3	3	2	1	2	10	64%				
M1	3	3	1	2	2	3	3	3	3		2	1	2	3	3	3	1	2	3	2	10	64%				
M2	1	3	1	2	3	1	1	2	2		2	1	2	3	3	3	3	2	1	2	9	57%				
M3	3	3	3	3	3	3	3	3	3		2	2	2	3	3	3	3	2	3	3	11	71%				
M4	3	3	1	2	4	1	1	2	2		3	1	2	3	3	3	3	2	1	2	9	62%				
M5	3	3	3	3	1	3	1	2	3		3	1	2	3	3	3	3	2	3	3	10	68%				
M6	3	1	1	1	3	1	3	2	2		3	3	3	1	3	2	1	3	1	2	9	59%				
M7	3	3	3	3	3	3	3	3	3		3	1	2	3	3	3	3	2	3	3	11	71%				
M8	3	1	3	2	1	1	3	2	2		4	5	5	3	1	2	1	5	1	2	11	75%				
M9	3	3	1	2	3	3	3	3	3		3	1	2	3	3	3	3	2	3	3	11	71%				
T1	3	3	1	2	3	3	3	3	3		4	5	5	3	3	3	3	5	3	4	15	98%				
T2	3	1	1	1	3	1	3	2	2		5	5	5	1	1	1	1	5	1	2	10	69%				
T3	3	3	1	2	4	3	1	3	3		4	5	5	3	3	3	1	5	3	3	14	90%				
T4	3	3	1	2	3	1	3	2	2		4	5	5	3	1	2	1	5	1	2	12	79%				
O1	1	3	1	2	5	3	1	3	2		3	2	3	3	1	2	1	3	3	2	9	62%				
O2	1	3	1	2	5	1	1	2	2		1	1	1	1	3	2	3	1	1	2	6	42%				
O3	3	3	1	2	4	1	1	2	2		3	3	3	3	3	3	1	3	1	2	10	67%				

Figure 9.6: Content analysis recycling evidence

9.4APPENDIX IV

9.4.1 Semi-structured Interviews Invitation Letter

Dear Sustainability manager / Sustainability expertise (Name),

Organisational behaviour for waste re-use - SEMI STRUCTURE INTERVIEW

I am writing in reference to the conversation I had with X in your organisation to request for an interview in regards to my PhD. I am currently a 3rd year PhD student at Kingston University undertaking research exploring 'Influencing organisational behaviour towards waste re-use in the UK'. As part of my empirical work I is interviewing range of stakeholders all from different sectors (retailers, construction, waste services, manufacturers, and charities) who has been identified through WRAP (www.wrap.org.uk) being leaders in the field of re-use. In particular, I am interested in exploring the corporate values, how they have created, and maintained re-use behaviour.

I do hope you will agree to this request. As soon as I have the confirmation I will then send you a framework of topics I would like to discuss with you. The interview will be semi-structured therefore, I would be grateful if you could set a time side, up to an hour in your diary. May I therefore ask you to provide your availability (earlier would be better) by emailing me at p.tavri@kingston.ac.uk.

I am happy to answer any questions you have about the study. You may contact me at +447701050669 or p.tavri@kingston.ac.uk. Additionally you may contact my supervisors Dr. Victoria Hands at v.hands@kingston.ac.uk and Prof. Sarah Sayce at sarah.sayce@kingston.ac.uk if you have any questions.

I do hope to hear from you that wish to participate soon.

Yours sincerely,

Purva Tavri
PhD Researcher
Faculty of Arts, Design, and Architecture
Email: p.tavri@kingston.ac.uk

9.4.2 Example Manuscripts

The boxes below provide evidence of the semi-structured interviews by presenting example manuscripts. Hereby, 'R' represents researcher and 'I' represents interviewees.

Box 9.3: Face-to-face interview with R4

R: [00:08] recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: [00:15] we said that as one of our corporate goals…it was sort of a company policy that would tend to follow zero waste to landfill. And then so I think it's now the first four years. There was quite a lot of work to do in terms of engaging people in stores and people and distribution centres and operations are worried and what they needed to do. But now I think it just pretty much runs itself out. It was said we follow zero waste to landfill. There was lots of detail behind in terms of…what that material would then be used for but for most people the first point of engagement was just making sure nothing goes to landfill. So kind of what happened after it was it didn't really matter that was at least the most people…the most important thing to do was making sure they were doing whatever they needed to do to level that work which was at times in a period some time segregating different materials sometimes and you know going to extra effort to make sure that they were recovering the materials from the shop or putting them into the right…containers backstage etc. But then working hard with our small team then worked with our logistics provider and our waste contractor to then really work up ways of getting the maximum value from that waste and that was a longer period of journey you like growth and depending on things that you know so were technical waste facilities are available in what locations and that could that's a very dynamic situation it changes all the time to come on board with new facilities that allow you know better separation and better re-use options then we would be able to shift materials going from where they were going to the best available location. You have to balance costs and economics over time so we actually found that what was more helpful in terms of the contract to manage that on our supply chain was someone who could have flexibility. [02:35] So we…we saw a downside of going with someone like a third that in particular sites because their interest commercially would be that our waste go to their sites that have set up commercially. Whereas if we had someone so we've got…to help structure the group do are sort of waste contract and really the skills that they've brought that keep up with most useful was a very good logistics network and proper network approach so as when new technology come on board and move to Manchester and it might have been owned by [*anonymous*] it might have been owned by [*anonymous*] to someone else. Supply chain was then able to take advantage of that by doing deals with them. So we felt that was quick and again because of our particular nature of R4 we have a lot of waste according to most standards most businesses want a tiny amount compared to our competitors like the big supermarkets so each organisation had to find its own solution. So if I had the group had huge amounts of food waste then it made sense for them to build a dedicated facility for example whereas we would have some food waste but at a much smaller scale which meant we really didn't lend itself to. So it's all about when it comes to waste recovery as you know and it's about volume and scale and the business that have been built the location and logistics because a solution can easily be a technical solution that works can easily be not economically viable in volume allocations are in different places some years.

R: [04:04] the research shows that change in an organisation takes place at any or every level. For you can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation?

I: [04:17] it was top-down and it started somewhere around 2011.

R: How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: Yeah it's obvious that they play a part in terms of what is able to be recovered and what isn't so [04:35] In terms of packaging so we can specify certain materials which we know can be used recycled but if the local authorities haven't got the infrastructure haven't got the contract with the waste providers. The bar isn't important in their area then it won't be in a relationship with local authorities in terms of your management

R: [05:00] in terms of managing waste within R4 do they play any role?

I: [05:06] I don't think so…no…no…we've tended to focus on relationships with local authorities about take-back from our customers. So our packaging which goes to customers and then coming

back through and ending up in their facilities centrally sampled [*anonymous local authority*] we they weren't recovering sent some materials which we knew could be recovered which we had a lot of which are in our packaging. So we and a number of other retailers kind of [05:30] supported financially to invest in infrastructure to then enable that to happen. So there are a few examples of that but I don't think not about anything else but it's more about sort of general partnership with retailers as a whole.

R: [05:42] the government of silent on unsold stock material. How do you classify that? Is unsold stock part of policy?

I: [05:58] so usually commercial businesses will try and they're very efficient at getting maximum value from things. That's how business works so it will…will obviously do well discounting as much as we can to try and clear sale. We've got to part operations so again we can sell unsold stock out to the outlets and people are quite prepared the outlet shops.

R: So what kind of outlet shops?

I: So we have outlets and so yeah…yeah…so if you go to an outlet village you'll see R4 as you'll see some of the other brands that are quite common in including retail. So then said isn't clear from there. So that is an option. [06:39] we have partnerships with charities such as [*anonymous*] and [*anonymous*] and T1 and we will see for clothing items. We will give them we will pass our clothing to them and then they will sell it through their charity shops so it will essentially retains its intended value. [06:55] It's just the monetary value has declined so the dress is still gets to be used as a dress it's just that instead of the margin we would have made or our loads the charity shops makes a smaller margin. [07:07] and yeah that's so when it comes to food items. Again it's lots of complications with food safety and regulations and is very inefficient. So clothing is fairly simple so you can give it to a charity shop and there's no issue about hours of trading or shelf life or anything like that. If you're clearing food and its clear food typically at the end of a day you'll will…as soon as it's approaching its best before date of use by date will reduce the cost and won't reduce it further. Same approach but eventually there comes a time when the shop closes and the time the shop closes is out of working hours for charities so and it has to be in by midnight sort of thing so that that there isn't a natural supply chain queued up ready to go in eight o'clock and period the supermarket shelves and have it got rid of by midnight one o'clock in the morning. Anything that doesn't kind of exists on a very local…local basis often by volunteers quite unreliably and it's very costly to…to…implement so that's why we're written in large largely in collaboration with others typically at a city level. So this project with [*anonymous food charity*] who we're trying to coordinate with the shops that have been raised with the charities that mean food waste and trying to find a very efficient distribution model that kind of works with other constraints and lots of it. [08:24] I think you're doing that in cities and towns across the UK. [08:29] the challenge again is one of those things that companies are set up to engage it often a national-level and therefore trying to do things that people have always. It's also a bit of a challenge. We can usually do a few if the scale is big enough like a city like London or Manchester kind of works and that's what rapid doing with their system or with cities. Otherwise we can usually do two or three pilots but then we often have to try and find a way of making that national rather than doing it.

R: [08:58] Have you conducted any pilot?

I: [09:02] So we're involved with like say the [*anonymous*] food waste distribution and we're doing we're part of WRAP sustainable cities. Manchester is the one we're involved in there. We've been doing lots of work with [*anonymous*] charity and so they are an organisation that…there's a whole detail behind them but on this topic so they will take [09:21]…product that hasn't been so that's food product and put it into their shops and sell it to customers as well too…so…our one of my colleagues has actually worked quite closely with them and helped them open a new facility in London. So they're actually building that network that I've talked about across the UK rather than where they were originally which I think was in Yorkshire.

R: [09:48] Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.

[00:10:22] we were not really that worried to be honest I think and so there's lots of industry collaboration like round. Love a clothespin on the part of a part of action plan [10:45] and I think everyone is of the view they're all aware of the importance of we use and in terms of extending life. First of all and then when the item is no longer or in ensuring that the item is worn again so again…so ultimately a jacket to be able to last…twice as long as it normally lasts. Then when the person doesn't want to wear the jacket that someone else can wear at the either through charity connection are passing

on to friends and family it doesn't really matter but that mechanism of worn and again are worn again overseas ah if it are then refurbished because it's maybe damaged to some extent so upside could be purposefully fashioned. Then you're down to the…if that it isn't possible…to kind of recovering of there…as much of the material as possible. The so we can…off…and it's…it's quite good because the economic value follows that hierarchy anyway so it's in business's interest to have the jacket worn again as a jacket rather than strip it down to the privates and remake them. Some of this I'm not talking about but our competitors. I think most of them have [11:59] different schemes in operation I think [*anonymous*] are doing a good job similar to shopping in terms of getting customers to take-back clothes. Some of the supermarkets are doing a good job in terms of facilities on car parks without flats but textiles into bins which we know works well. But we don't kind of try and we don't try and try numbers and things like that because the businesses are so different and so the type of item had to help to determine the re-use. Option that's most applicable…one of the simple rules we've developed for in our business is if it is a fashion house and so there are items that are fashion items [12:34] they will typically not be made. They're not intended for a long life because there are fashion items so people know read anything more in three months so you don't engineer you don't make it last 20 months because there's no point. So typically those items then if you think about the hierarchy they'll tend to fall into their stripped down and re-used material rather than wear it again you know sort of thing. So in those cases it's worth thinking about design for disassembly that's worth thinking about. Materials that are easily recyclable so defining technical teams will be giving them increase guidance as to what you should do. But those categories for other products that are intended to be staple wardrobe collection except durable hard wearing then wear a locomotive mule teams can push if it's meant to have a life of 15 months. What could we do in terms of the construction of that garment either in the saxophone tiebreaker at the seams or the design to enable it transfers us 25 months and where that's possible. We're now increasingly trying to drive that behaviour by rewarding it internally as an attribute. So we have actually say this is more sustainable rather than typically they've obviously been focused on upstream in the supply chain so if it's from recycled carbon air and if it's made in one of our dye houses that have reached higher standards it gets a much reduced but if a technical team I'd broken make a project last twice as long. At the moment we hadn't been rewarding them for that and now we are correct. We're building a system to kind of. Figure out how we verify that and be able to say that's a good thing to do. So yeah I guess in terms of the competition it's not really something we spend a lot of time…worrying about.

R: [00:14:29] what happens to that unsold stock? Do you have targets against which you measure for unsold stock? Please elaborate. Are those targets working? How do you review those targets?

I: Yes. So we have figures because mainly because. We capture the economic value as cash contribute as a contribution to charities which we report every year. So in our every year we'll monitor how much stock went to utilize a shelter or T1 and what that value of that stock was then rather than so much of the volume. We also have. And I guess internally we have…predictable terms that come into us from customers we have. Fought against that arrive in store from manufacturers which they get returned to manufacture. We get them refurbished so there's a lot of kind of…network of suppliers across the UK who can. Take clothing that slightly damaged. [15:40] So none of that will go to landfill all of it will go to re-use or recycling. Mostly it will if it's until stop it will go for re-use the most graphically.

R: [16:04] Operational re-use materials / materials from renovation/refurbishment or moving such as building materials, furniture, fixture etc., Does waste policy apply to them? Please elaborate. How such non-core business materials/waste is dealt with?

I: [16:14] so our property team have a number of specialists working in that they've built it into our construction policy and guidelines with suppliers so if we're doing a shop build a refurbishment. So first of all push up the building element there is encouragement in the policy and the specifications to use recycled materials or re-use materials so for example one of our stories in Sheffield we used reclaimed breaks to build the straw and that came about because it was very much that in the brief to the contractors where possible make use of materials that can be re-used from other sites. So again all of that I guess the key materials are aggregates and soil breaks and [16:56] those kind of things. We've also got the actual physical infrastructure of the building and then in terms of refurbishing this and filling it out. We started in the last two years to re-use fittings and fixtures. So all the kind of steel things that you put on shelves the shelves that stuff all the food before this it was just it was always easier for contractors to just go and buy new stuff but in the store and get ready to help out with [17:22] the guys in the third team have done a great and working with the supply base to define the specifications for refurbishing their shelves refurbishing trolleys refurbishing fit out material to the standard that's good enough because that was always the concern for contractors that if they put forward re-used materials then the customer I would say that's not good enough quality we don't like the finish it doesn't look shiny enough whatever it might be. [17:48] so by our team working hard to say this is basically to produce guidelines for suppliers to say this is what it accepted this is how you

would do refurbished fit-out. Then that made a big superspy is to be confident in doing so and deliver it so that is an area that's growing and [18:07] head office it would they would apply the same principle. We have less control over head office because we don't own the buildings that are rented. [18:13] We're just a tenant with the land to this often negotiations with the land back and forth but I think it's fair to say it would be in people's mindset now that they're both thinking about these things without having to rely on policy coming down and specifications. [00:18:40] especially in key people in…in…in the important roads where they make those decisions so our property team ought to look after head office facilities for example to have the guys have been working really hard in stories will obviously go well put into the office. [18:53] they have that same mentality and the same sort of in the same team that look after waste coming back from store operations as well too. So they've built up quite a good competence and understanding and a good partnership with suppliers who can help address some of the challenges.

R: [19:10] what do you look in an organisation to consider it as the potential re-use partner?

I: [19:21] so there the T1 relations so for example came about. So there's a difference to those kind of within our operations when we have unsold stock either in the store or head office because retail operations there's a lot of buying of samples is a lot of competitive shop. [19:37] there is a lot of kind of quality checks so you end up in a building with a lot of committed lot of product which has to then be got out of building quite quickly. You know as we've got so much space prime London location its health and safety risk rooms full of cloths. So the key thing we're looking for there is speed. We want a partner who can from a commercial point of view get that product out the door. Obviously we want them to make good use of it but we want them to have that flexibility and responsiveness. We can phone them up and they can come in that operation runs easily and quickly and doesn't cost us any money. So in that case that was the relationship with [*anonymous*] and [*anonymous*] came from because they were so eager to have and there were people that we were happy with their credentials as a charity organisations we knew they could make this donation would make good sense. I think initially the relationship came more from a charitable point of view if I'm honest it was and if we've got this product rather than just wasted out whom could benefit most from it and these organisations expressed an interest we checked them out. [20:thirty-six] saw actually to great causes that our staff felt was good but ultimately the thing that makes the difference is their operational efficiency and ability to deliver what we want. We then run lots of checks to make sure that there are no issues with the product that they can't sell and you know you're not going to waste. But again their motivations are. They desperately want the product because they can sell it and then they can make money with their charity so it tends to be quite self-selecting they'd be very quick telling us if the material really giving them wasn't useful in their shops because they don't have space so that works quite nicely. And the other of the relationship with T1 was more complicated because it was we were looking at a solution for customers taking their clothes and we started initially back in 2007 thinking about if they would stick it into our own stories that seemed the most logical but at the time we had no backstage operations we had no reverse logistics in place we hadn't because we were taking with apart from stories for other things that kind of it didn't we didn't have that facility and at the same time our store managers were. Rightly concerned at the time it seemed crazy some were walking through with black plastic bags of old clothes dirty cloths and potentially and dropping them there. They were like oh my God. So we knew we had to find a partner. And what we were concerned about was could the partner match our presence or were across all of the case so we didn't. There is no point having someone in Bristol could do it. And to my point we didn't want 100 different organisations and we wanted someone who we absolutely knew could make sure none of that totally meant to learn from them. [22:09] it was obvious at T1 because they had that waste saver facility and our us and they have a presence on pretty much every high street relationship just seems her. [22:19] it seems logical to link up with them again basing this on new life and shelter. [22:24] the main reason for picking them was their operational execution. So if you remember they talked about you know one partner is waste it's who's got the logistics at work who's got threats about that.

R: [22:35] would you say that you see national scale charity as more viable option than collaborating with local-level charities?

I: [00:22:48] with national-level they've got links back from this centre to all of their shops anyway. It becomes a low-cost operation whereas if they have to build something especially for requirement of that usually becomes expensive. Yeah.

R: [23:06] how optimum is the collaboration with TSOs? Do you consider it a long-term partnership? Do you consider getting in partnership with other such organisations?

I: [23:13] so I think the stock donations with the charities. Yes I think one of the challenges will always try and reduce waste and therefore there is always a point to it then is less attractive for the

part of their readers to get in a hundred dresses every month and actually because we've worked really hard internally at only ordering one dress if we need to sample it rather than [23:35] 10 then they're getting they're getting less volume. So I think the volumes will probably decrease as we get a slicker and smarter in how we run our business. T1 for clothes coming back from customers again it's likely to be as…as we look at other solutions so can we can we can we offer the customer other options as to not every customer wants to make the top some of the number that's a nice simple solution that works for everyone. If we want to increase even more clothes going back we'd probably still have T1 in the mix because we do feed a large number of customers as they like that they like those going on to do good but we'll probably add complementary partners or options where customers can. Not every customer wants to do that. So for other customers who say I want to get my money back that can I want to sell us? [24:22] Then we're looking at that's project we are looking at other ways that we could recover the items.

R: [24:29] Could you tell something about it.?

I: So it's a two-year project with the [*anonymous*] University and we have funding from [*anonymous*] funding body in the UK which used to be technology strategy with borage and it's to look at new business models to encourage more [24:46] re-use of clothing and then the challenge the challenges are commercial and customer not technical so what we have we need to find ways and again we're an established business at the start of new start that is like renting close doing subscription services offering to buy that close and some of them are working very successfully but only in a very small scale a very local scale. Some of them are [25:13] operationally working successfully but not making any money which therefore isn't very viable over a longer term. Others are working okay but not delivering great customer satisfaction so they're getting customers but they're not keeping them in the ranking scheme. So for example so those we kind of we know the set of options that you can do. So those can you can provide refurbishment services and repair services. Can you offer a rental on subscription? Can you let people? You know hire a wardrobe rather than. All those sorts of things and you let people buy sell you clothes back in return for [25:50] new clothes. And we're spending 2 years is just working out how you three different customer segments how you tailor that to make it attractive…for…us…to race and how that makes money for the business and how you can deliver it over a period of time.

R: [26:19] what factors determine the level in which you interact with the TSO? Is there room to do more?

I: [26:42] I think there is a big challenge and this is where it's probably the strength of R4. There is a general concern about quality when it comes to re-use where there is a will there will still be still a strong enough integrity in the building will it look nice enough. Will it last just as long as the clothes for example are they clean? A Well they again are fit for it. So even if you recycle fibres so there is there is a general scepticism in…in people specifying materials and reusing them rather than starting from scratch because there's a bit of a no…no in this and therefore…addressing…building reassurance that the quality is as good or better [27:31] or that it's less but this much less expensive lower price so it's fit for purpose so you know so it may be that Virgin recycled carton isn't as good as virgin cotton but actually being able to say it has this quality standard allows the buyer to then go I out use it in this product and they can use this product and actually it's if it's 20 per cent cheaper. That is interesting to me what the challenge we have is if the recycle carton comes in and they're claiming it's as good as the virgin carton and the buyer tries to use it in this product and it doesn't perform then they will not trust and they won't use it again. So that's just not good enough. So it's really it's really important that there is the integrity of any product that has been used about what exactly what quality credentials that comes with and that's provided through testing and through standards through some…some way of being very transparent about what that material where that material has come from what it is capable of doing. [28:29] and then you can decide what purpose it is needed for and then there is the extra. So that's one good thing because R4 is famous for quality and internally we have a culture of…really asking for high quality. So once we overcome that which is the example I gave about the refurbished material and store once the guys were able to say that is acceptable then that builds a lot of confidence. Go right. Every other store can now have refurbished it but do it this way.

R: How do you manage that and how do you balance the relationship and cost?

I: So the economics will always be a function of global markets which is the challenge. So the technical one is easier in a way in that we have to have technical experts in the business who are constantly innovating and trying to find. So they're always experimenting with suppliers with universities. Listen to what other competitors might be doing about you know oh we found a use for refurbished steel in shops for example and there's a new process that galvanises are really happy that gives the same like lifetime as virgin material so that they'll be aware of that and they'll say now we'll

work on [29:thirty-six] The cost pressures because it's not. So the first from will be technically is it good enough. Once you're happy with that then it becomes okay. Now can we get the price point to the point where we can compete? So for example things like recycled carton the quarter is not good enough and it's too short so we can only use it in low-cost ones and at the moment it's so expensive to get we can it therefore. [29:56] So there's a lot of those two challenges on the continent side one get the quality better through new processes of recycling but to actually get the cost down and so it kind of varies through that. But the technical teams will tend to work to find technical solutions and then. And that becomes the issue because what you want is just one company that comes up with a magic process that then becomes exclusive and then commands a premium because that will ultimately start up a conversation with them saying we want to use recycle refurbished material. The assumption the starting assumption moves people and businesses that should be lower cost than virgin or at least it should be equal. No one expect to use refurbished materials at a higher price. And this is where most of the suppliers are going wrong where they say that you want reprocessed or recycled material I am making it but you will have to pay extra than virgin. We are not going to buy it. So we have to be mindful of that and we do not go with the options where financial model does not make sense.

R: With regards to your unsold stock supply chain, do you send it to manufacturers or what are they ways in which you deal with these items through your supply chain?

I: There is an industry around transforming the fibres in Yorkshire. They are around since 1800s. So there is lot of expertise in Northern Yorkshire regions which is interesting as the London authorities were saying that what they could do to make better ways of making textile material re-use and the point i said through all these examples the most important thing is their logistics and economics to implement the technical solutions. We have technical solutions that exist in Yorkshire. We have textile waste in London. What we need is a very cheap way in which the waste can go to them as there is no point to build a new factory in London because you lose the economic scale so actually its logistics thing.

R: [33:15] in your sustainability report, you have provided a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?

I: We try to keep it quite simple. So we know the volume coming back through T1 and we know how much of that is sold on so we see that has been re-used and we know none of those goes to landfill some of it goes to the middle stage where it is used as material not as an item of clothing. But we do not break it down into the entire specific. [34:08]

R: Do you want to be anonymous?

I: Yes, Who else are you talking to?

R: I am targeting different types of organisations they all are UK based. They are retailers, clothing retailers, food retailers, mixed retailers, manufacturers, and charity as well. T1 is also one of the organisations I am targeting. The core idea about my research is I want to understand that what are the major inspiration within the organisations that enables them to move towards re-use. Does TSO play a major role among corporates to carry out re-use activities? Because re-use is not the core business model among corporates and it does need economics.

I: This is interesting as the examples I told you clearly indicate that they do play an important role. The challenges I think is the capacity the, the logistics and to make sure economics are right. It is becoming a professional part of the business. I am starting to think about circular economy and businesses are becoming more aware of this. [36:33] So, the downside is the third sector may find that they get less in the future because, businesses are starting to think about their own ways. It will be interesting dynamics for the industry for next few years.

R: Any messages for TSOs in general?

I: [37:00] they need to access the viability of their business model and to analyse is re-use model genuinely viable for them in longer terms or are they just putting extra investment, time, and effort run their charities. Because all they want is to earn money to run their charities for social benefit. There are fewer businesses whose core charitable cause is to run charity, but for T1 they want to earn money to carry out the social cause overseas. At the moment it might seems as a viable option for them to get the clothing back to give to the customers, but if they find customers buying second-hand cloths from lots of other sources and actually it is costing them money as they are not core textile charity shop it is just a vehicle for them to do what they do so at some point it may be at some point

it might not be an economically viable option. There are lots of competitions now people are selling from home. People buying from friends people swapping and sharing cloths rather than so what it means for their business model is interesting as what it means for us in retails. [39:11] we have seen that as it has got more organised people are traditionally done recycling for example mobile phone recycling they are typically third sector. But now corporate is coming up saying we will take the entire phone to recycle them and thus charity businesses are shrinking as corporates are deciding to play their role towards circular economy. So in some ways [39:thirty-six] I think they have started to get threatened by businesses that have started to get more involved.

R: Through my research I found out that third sector are facilitators towards these activities and thus it is interesting to know that they can get threatened in long-term.

I: [40:04] the customer research we do we know that customers like giving lots of cloths to charities but some customers want their money back. Through our study at [*anonymous*] University we call them as 'selfish impulsive'. They are the people who enjoys shopping as social activities for them it is not motivational to get back to T1 that is not in their psyche for them they are proud of what they bought they are proud of what they own and they remember how much they paid for it so what they will do is you buy it from me and give me money. Third sector for them is not of any interest. I think third sector can play a role in the process. But if we want re-use to be in the scale of what we want then there are many other methods of doing that. [41:10]

R: Do you think third sector can help you in other ways that corporate are thinking of in future? Instead of making those competitors or vulnerable can they be used in any ways?

I: [41:thirty-six] it is difficult to think third sector as a big block T1 is very different to other charity shops only because they have the unique capability to deal with their waste. T1 can actually run it as a separate business whereby they can call it as a limited company and run it. Third sector is a very varied sector social enterprises can come up with city level solutions then that can work. Again if they can solve the problem of economics and it's cheaper to do at city scale rather than trying to nationally then there is opportunity there. I think there is lot of re-use that happens naturally that we cannot capture as part of the economy. So all of the stuff around sharing, what will happen there by transforming it into a formal system whereby you can actually track and trace it quite clearly that enabled by digital technology of how much swapping and sharing happens between friends, family and peer groups. I think that would be interesting.

R: In R4 in future do you think we can see a swapping section within R4 stores?

I: [43:17] right now we are looking into the things that enables re-use opportunities rather than, so for example extending life will enable re-use or it actually prevents the need for re-use so actually you can wear it for longer time and it still looks good so you do not actually want to get rid of it and give it to someone else. [43:45] extending life and finding ways where we can encourage customers to re-use them through different motivations, I think that could be interesting. We are looking at the rental subscription which is the same thing. One of the major challenges to do so is how you sell different propositions and still remains one company. The swapping works for certain type of customers but not all. Rental might work on some categories of products but not all. That is what we will be working on in next 2 years to test whether it works and if so in what ways it does. Digital technology can make it cheaper and easier to make it identify the customers and offer them the bespoke service as going to an extra step. Other barrier that we are dealing with is the perception of customers for example people might concern about the hygiene or psychology that someone has wore it so we think that we have got technical skills so how can we deal with some of those issues and also looking at some of the social and psychological barriers with fashion does ownership of the item overcomes the factor that someone else has wore it before. But we have to test it.

Thank you [47:00]

Box 9.4: Face-to-face interview with C1

R: [00:02] so my first question is Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: [00:12] so we don't actually have a zero waste to landfill. I don't know much about the way the C1 is split up. We are group policies but then we have different units of the business which operate slightly differently. So the construction side of the business have a target of zero waste to landfill. However it fit out we decided that while ideally we don't want to send anything to landfill. We don't

see things like incineration as a suitable alternative. So actually our targets are around maximising diversion landfill through re-use and recycling where we can. Obviously there will always be a certain amount of fines and things that will go to landfill or incineration.

R: [01:30] Government definition of re-use is *"...any operation by which products or components that are not waste are used again for the same purpose for which they were conceived."* Does that share with your definition? What is the specific understanding of re-use?

I: [01:45] you know I don't think that we would consider that definition being used exactly that. I think actually when we consider any form of re-use if it's in the same format and it's not in reprocesses even if it's used for a different purpose that's just as good. So that's why you don't see a lot of materials to charities who have re-used them for something completely different. For example I don't know maybe two or three years ago we donated a lot of materials to a charity called [*anonymous*] and they created a small Education Centre in one of the local parks about beans so they used what were interior wall hangings to then build this…local Community Centre, information centre. Yeah I use all sorts of materials in slightly different ways to what they were originally conceived for but still re-used in their original format.

R: [02:45] so how many have you talked about the number of charities and your partnership with them. How did it start?

I: [03:10] I think it was. It started off…quite a few years ago probably five or six years ago. We were finding that a lot of the projects where we would go in and strip out the existing finish are. The idea I guess was to prevent stuff from now to landfill and also to save money because you spend a lot of money on waste removal imagine and see is that instead of spending the money on it just going to be reprocessed to something else. We'd rather donate it to a worthy cause so that someone else gets the social benefit to their own…so I think one of the first organisations we engaged with was [*anonymous*] and we donated a lot of carpet tiles even a whole post room structure with steel frame lots of other things too. I think one of their bases in a place [*anonymous*] where they educate young children who don't have access to education and then from that we obviously started to find more and more local organizations that could benefit from the materials. So we've…we've donated stuff too. There's the re-use partnership with T8 in to say you know they use lots and lots of different people. So whenever we have a project if we have enough time to carefully remove the items stack them up and then arrange transport. If we do find somebody who wants you will do what we can. Obviously some kinds of programs move quickly and structures has to be taken out of the building too fast before we can find someone who would want it to use.

R: The research shows that change in an organisation takes place at any or every level. For you can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation? So how do you find a research team within C1?

I: [06:00] there is no dedicated research team. It's not…it's our sustainability department. So I head up our sustainability department and our role is to advise our project teams on legal compliance making sure they have all their plans and procedures in place all that stuff. We also deal with the environmental assessment methods being LEED, SCAR. We also deal with community engagement and wanted to benefit. We work so kind of added to that role and obviously dealing with things like waste management and helping the project teams to reduce that waste will often do the research for them to find any charity or a school that might want to do that.

R: [06:52] how optimum is the collaboration with TSOs? Do you consider it a long-term partnership?

I: [06:59] I think it depends what you mean by long-term. But I think it certainly does have. A medium and maybe semi long-term benefit to those organisations at root hands on there…longevity…so for example T8 they have a. Building up in Tottenham which is an old 1970 school building it's falling apart. We've donated carpet and materials to them before we're just about to donate a lot of ceiling tiles and great which is completely new it's from a finished building and the client is moving and doesn't want that. They want something else. So rather than waste we found someone who uses it as re-use.

R: [07:54] so would you say it will be ongoing relationship?

I: [00:08:18] Yeah it is I mean it's um it's definitely not structures there's no structure to the relationship it's more a case of we'll approach them if we've got something. So we got this. Do you need it or they'll come to us and say we're looking for this. Have you got it? I mean it's more on an

as needs basis but it is an ongoing relationship. I mean I've been dealing with them for about four years now.

R: [08:45] what do you look in an organisation to consider it as the potential re-use partner?

I: [09:10] Well. We don't discriminate. So I mean I think it's important to establish that they are a charity that their registered charities so not giving materials to somebody who's going to sell it on to make a profit for their own personal commercial gain. And in terms of what that charity does and how they function within their community. We would say that we probably don't do too much searching in to [09:43] Trying to find anything wrong. If I may say yes…you know first of all we make contact me though kind of feel to understand how it is that they work within their community and what the benefits are and really how they benefit from our support. [10:02] I mean obviously we would try to avoid any kind of political affiliations or anything like that. But really I think it's just about finding…finding somebody who means something that we don't have a need for anymore.

R: [10:17] what factors determine the level in which you interact with the TSO? Is there room to do more?

I: [10:31] The projects that we have to deal in so we will tender for the project we might be awarded the project on Friday and have to start on Monday and then start stripping out and there isn't enough time to either identify a charity once a year or even if we do it might be that they can't take the material for a period of time. We've got nowhere to store it so it's kind of. It's the luck of the draw as to whether you know the timing is right for them. Yes because of course we have to because there's always a cost involved as well obviously to transport well to carefully dismantle the products to stack them install them transport them to the organisation possibly assist them with installation and things like that. And if they don't have the space to store it before they'd install or really can't take it soon enough then we can't story on the site because we're dealing with internal projects. So has it has to be moved so that we can go on and do the project with them to do so.

R: [11:59] Do you think that in a kind of there's an informal connection or relationship that becomes one of the obstacles that you're still making or would you say that there would have been a regular or a more formalised structured relationship would it be a way.

I: [12:22] No I don't think so because the trouble is…is that there was so I work for the fit out engineer special projects division most along projects are anywhere between three months to three year long a most. So we have a high turnover rate. Next we got lots of things that are constantly finishing and starting new. We've no idea what work we've got. We also we're tendering for work all of the time but we can't forecast. So we said with the T8 that we're going to help you get this…this and this because we have no idea what projects we're going to have. That means stripping out whether they have the right materials coming out or not. So it doesn't work like that.

R: [13:11] In your sustainability report, you have provided a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?

I: [13:22] three main environmental assessment manuals - BREEAM, LEED, SCAR. I don't know if you know much about them but basically from the earliest design concept before we were involved and because we're a contractor on the client the design team should engage a qualified assessor. They would get a scope up project and design it for optimum energy efficiency water efficiency designed for the health and well-being of the occupants…sustainable material installation pollution prevention. There are some credits related to land use in ecology…your own internal project that doesn't count. Waste Management in terms of construction waste produced which doesn't include strip out powers the construction that's produced. Yet and a few other things like the cost

R: [13:30] How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: [13:43] No we don't deal with Local authorities at all.

R: How the re-use strategy is coming to being in your organisation?

I: I think it was more a middle approach basically it came from sustainability to. So when I was trying to drive the project teams to [14:11] Find ways that they could save money improve their waste performance and benefit the local community at the same time. And then that will obviously get buy-in from the top because you're putting money to the bottom line. So there was…

R: [14:29] some there and then how did you start?

I: I mean wasn't all stuff so me or Ah well I think it was probably just from a. There were some projects that we did in Liverpool Street which [14:47] This was before I was here but I think it was obviously identified there was a lot of materials that were very good quality and a well head of sustainability at the time would have discovered mission that all of us who we first started working with had to identify an organisation who could take those products and use them for social benefit.

R: [15:16] Charities now days are transforming into social enterprises. Have you done work with any social enterprise in facilitating re-use?

I: [15:32] Yeah. We have done work with social enterprises before as well so we have donated furniture items to an organisation in the Midlands who were retraining people in carpentry and refurbishment and they then sell those items obviously to make money to fund their charitable work and to pay the young people who are training so you know to support them.

R: [16:12] Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.

I: [16:14] often we manage you every so often will do a bit of a benchmark really. I think. We've recently launched our 2020 vision. Obviously we did a lot of…comparison research against our competitors in the industry before setting out what our values and targets are and the expressions that we want to achieve. At the moment we're using this year to do our baseline of our own performance and we will be setting targets against our own performance and we were we…one of the original signatures of the WRAP halving waste land scheme which no longer exists. We're going to be signing up to the new WRAP resource efficiency mark so that in it will provide a comparison against the organisation to sign up. But I think in terms of the benefit to us as a business of how we perform against our competitors clients look at so many different variables these days that is not one of the most outstanding things that they would occur in the first place. They want to know that you're committed for a good price but any unique selling points that we can say is best practice as part of our service obviously goes a long way. So yeah we will sort of keep an eye on what our competitors…competitors are up to every now and then but not. Necessarily consistently because again though. We so I work for the fit out edge division of our company and. Our competitors are the likes of [*anonymous*] and they are subsidiaries of C5 and others so they don't necessarily have their own…waste figures. Sometimes they're just absorbed within their larger group company. Fortunately I make sure that we have our own statistics as well as feeding into the group statistics which is what's reported in our annual report…but in terms of us being able to compare directly…it's not always possible.

R: [18:59] how do you report your waste figures?

I: [19:03] at the moment the way that we report our waste is that we when we set up all of our projects in our side of the business we use something called Smart Waste. But we also have a separate system called 'Access' and so we set our project up and then every month we make sure that we get the waste reports back from whichever waste company is using them and those have checked against the waste transfer notes in the documentation that we have our sites to make sure they are accurate. So we know which way shapes have been segregated. What was the actual tonnage with the weighbridge ticket that matches up with the waste transfer notes and then the other transfer stations will be able to give us there…diversion for a moment or recycling rates depending on the waste stream. So if it was 100 percent segregated No it would be 100 percent recycled and if it was mixed waste then from their own material recycling facility they'll be able to tell us that fall last month 97 of all of their waste was recycled and fuse that was landfill. So we require that pro-rata to the tonnage that way. And so and then obviously re-use. We recorded that separately any way because we deal with that directly. So we require all organisations to sign a transfer of goods from which we complete. So it will stay what goods. What's the approximate weights quantity and so on with photographs signed by us signed by them? So those figures are then also acted on to the project performance or the divisions. So that gives us the recycling the re-use and obviously any landfill or incineration as well because this incineration would be reported separately by the West transfer companies and so on the harmony but would you say that well you…you if you own the region only use percentage. The carbon emissions in 2013 as compared to 2010 have gone down by 35%.

R: [21:39] in general the amount of re-use?

I: [21:43] you need approximate is tiny compared to the amount of waste we produce the amount was re-used is a very small 10 percent per say oh even less than that. So if we if I don't have the exact

figures to hand but say we would to produce a 20 thousand tons of waste a year and. We may actually don't say about 500 tonnes for re-use so it's going to be definitely less than 5 percent more likely to be one or two per cent realistically. But again that would year over year and what projects we've got whether the clients have or the previous tenants have moved out and left all of their office equipment and that stuff would to be easily usable as compared to its already stripped out and they've just got some grubby carpet a few things you know there's not going to be a lot there. We strip things and whereas construction building new thing is we both…both sides of the business to refurbishments. So again that does have an element of downstream power diminish in terms of demolition materials which you would consider to be more the structural element building in the way that you demolisher can't really re-use them. And so you would be compromising the structural integrity so we would never donate something that could possibly be misuse or cause harm if it was incorrect used by an organisation.

R: [24:20] how do you quality check items that you sent for re-use?

I: [24:22] so like I would say the types of products that we wouldn't name is carpet or furniture that is easily visibly and thought yes it is basically carpet. You can visibly check if it's okay. And with regards to things like seeing how we would involve our trade contractors in the reinstatement of ceiling for the charity. So you know they're qualified mechanical electrical engineers who do that.

R: [24:47] what have been the major challenges?

I: [25:02] I think there is. I think what we've certainly struggled with. In the last maybe two or three years is when I when I first joined C1 there was an organisation…whose name I can't remember but they almost acted as a. Not broker but you need to go to them and say we've got this. Have you got any charities be interested. It's the middle person that do the research and they then change it and I think why paying for their service which at the time unfortunately we were in a position to be paying them to do that. [25:57] and so I certainly think there is room in the market for some organisations to fill that gap between construction companies and charitable organisations. The trouble is…is you know they can't operate without going pay. So you can't expect charities to pay. So if there's no government funding anymore. Then it is looked at. I think it's something we will need to look at as well to see if there's ways that we can maximize that.

R: So. Will you see that only use within your staff and in supply chains re-use, circular economy, sustainability it embedded?

I: I think it's not as embedded as it should be and I think. I think it. Is the same as you could say about sustainability it's not embedded as it should be and. certainly with the supply chain and [27:16] you know trade contracts and stuff like that…They're so focused on getting the job done to the program and to the departments to the business. And it kind of comes into the whole wide to sustainable procurement argument. Trade contractors and suppliers will in their price for the job allow for 10 per cent wastage. So you know obviously you have to allow for a certain amount in case of damage and things like that but that's the next focus for us is we've got high recycling diversion rates and new firm new focus will be on actually reducing waste reducing the actual waste a hundred square meters or per name new or whatever I'm trying to work with our supply chains. Is there a way that we can actually reduce those…?

R: [28:00] so is there a case you know it is the case study that you know this is something we're going to be looking at.

I: [28:09] so we haven't done the pilot yet.

R: [28:11] in your sustainability report 2012 there is a case study on re-use in [*anonymous project*]. Could you tell something about C1 role in it?

I: [29:22] Well there we have several different packages on the [*anonymous project*]. So there was one package and works which was called over lay work I think the one you're referring to and that was when there were pre-existing facilities like court or. I don't know. The ABC you know facilities that already exist which had to be adapted in order to host their events. So we would have to install the infrastructure that could take the audiovisual equipment along the stuff so that they could actually televise events and things like that. So…with the whole [*anonymous project*] the idea was that everything should be designed so that it can be dismantled and re-used. So for example the voluble arena that was completely dismantled I think it's supposed to be taken to Scotland Yard games and then going to Brazil for the next [*anonymous project*] as a that and the same approach was supposed to be going to the temporary overlay works. So things that could be either taking back my supply

chain for that you know re-use or resell or to be passed donated for re-use or something that could be easily recycled. So there was a focus on not using certain materials like PVC and things like that which are not good for the environment. So we had to work very closely with the [*anonymous project*] Delivery Authority in and then you draw our own relationships with organisations to against stuff. So I think we donate to it…a whole load of trees to charity…to be replanted because they are being taken out…of the… [*anonymous project*].

R: [40:22] is any value action gap or misperception in regards to re-use?

I: [040:25] Yes, commercial team look the project from one perspective, construction team look from another perspective majorly with focus on programme and delivery. Everyone is very busy.

R: [40:54] how do you manage the gap? How do you make the other teams to understand your point of view?

I: [41:06] we always tend to look from a bigger picture. We help our projects team to do that. We demonstrate cost-benefit analysis and if the time allows we offset the re-use benefit with cost of careful strip-out, labours, logistics, and time. Everybody in general tries to do their best. They generally come to us and ask our advice if time is not a constraint. We make sure that we get involved with every team from start.

R: [43:13] Can introducing government mandate on re-use or introducing policy or regulatory measures to re-use make change?

I: [44:03] Re-use is something that needs to be come from design perspective. To certain extent most organisations will start to do something if it becomes mandatory. Yes, government needs to step in and say this needs to be done. However, it needs to be acknowledged that government cannot enforce re-use of particular materials or items. Since it will be difficult to check on the quality of re-use…introducing incentives rather than mandates for re-use is an option for the government.

R: [50:08] C1 operational office? Any refurbishment projects in-house?
Our office here is rental and we do not own it. Also, we have not done any refurbishment for long time. If we plan to do so in the future it would be easier to plan for most sustainable option and we will do as e do with clients.

I: [54:43] Do you want to be anonymous?
Yes

R: Thank you [55:00]

Box 9.5: Face-to-face interview with W1

R: [00:00] so to start with, recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: that would be the environmental team. Okay, I mean what we're talking about the services that we provide to our customers. So we have a compliant. We have environmental team legislation. They advise on how directives and legislation needs to be communicated to the customer and integrated across all services and that he'd actually touches a lot.

R: Government definition of re-use is *"...any operation by which products or components that are not waste are used again for the same purpose for which they were conceived."* Does that share with your definition? What is the specific understanding of re-use?

I: [00:59] Yeah, it's the definition which is provided by the government.

R: The research shows that change in an organisation takes place at any or every level. For you can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation? What is the inspiration behind re-use initiatives and collaboration with TSOs like [*anonymous*]? How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: [01:59] users were sending furniture to some of the peoples and home whom he who needs that. So, restoring for nature and recycling or re-use paints. We're working directly with so be on contract things accountings working directly with those social enterprises. Okay, so it could be for example Household Waste Recovery Centre materials or furniture that particular site is part of the contract that we have with the current local council. So they're all customer that's part of the service that we provide is so the involvement of the local authorities only to customer they are not connected to our business ship social enterprise because they say you need to pick up household waste. [02:59] we decide what we're going to do with that was part of the contract and part of that is given to social enterprises. So it's handled separately the council know what's happening.

R: Okay, so they are nowhere near do I mean within the supply chain network would you say not?
I: No… Not…no because we were taking the waste from local residents directly from local residents and drop this off in the local authorities, and then you will take…take it from there. So its two different things if we're talking about repaying for example working with a social enterprise where they restore furniture we need to ask.

R: How do we get those items?

I: Usually it's because residents drop it off. Okay. That's a Household Waste Recovery Centre and we're managing facility if [03:59] the other service that we might provide is collection, so we would collect items from households, but that's usually waste and recycling. Yes. We don't we wouldn't provide any collection items know it would be if there's if they left us we shouldn't have to collect it. But sometimes we ordered. Yeah, so the…I think when we talk about the local council be involved is probably not in the way that you're asking there but they play major role as customers.

R: So for example third sector organisations or charities or social enterprise organisations would…would they ask you to go to local authorities how their connection is with local authorities to have any I mean, I mean the other way around really local authorities.

I: [04:59] some of them want us to show the social value that we bring as part of our contract. And so when I say contract I mean it could be collection of waste from households waste treatment facilities incinerate waste incinerators Household Waste Recovery Centres street sweeping could be any part of the waste management and local councils. Say to us you need to demonstrate how you bring social value as part of okay, and that is obviously the social value act that was put in place. They have to ask us to show them that okay. So one example of how we show social value is by working with Social Enterprises. Okay, because it's not only the environmental benefits of you who use but it's also usually providing jobs for disadvantaged communities of different disabilities.

R: [05:59] Okay, so you have to go and give that report of social values to the local authorities. Do they require it or do the government?

I: I mean when they go to tender the better the suppliers need to demonstrate how they will show social value. So to be honest, it's normally at the bidding of attendance 10-8. We say we're going to

do this, this and this or going to work with this Social Enterprise and then we work with them some local authorities want us to provide an update at the bidding.

R: so how did this I mean the concept of re-use? So how did this concept come all about so when you say re-use?

I: [006:59] I think it's fairly new at really I it's not really old.

R: Like your partnership with [anonymous] TSOs for you can you gives me an example of you being one of the re-use supporters, so how the re-use strategy is coming to being in your organisation?

I: Because when you say re-use the reason I talk about it being brought up because our strategy is circular economy and that is really where you so you're not talking about that. There are very limited amount of things that are re-used. So there is a thin line between re-use and refurbishing recycling so re-uses just using it as [07:59] this without recyclable information gets around. Yeah, because we I'm just trying to stay in terms of our business strategy and circular economy. Do we say its reusing do we actually say it's usually use different words manufacturing products? That's not really used. That's a bit different. Yes. I've been trying to think of an example as part of a customer solution using which was the oil example. The only was the cooking once that has been re-used. I mean, I don't think they will be re-used directly. I think there will be something refinement done to cooking oil and then they can be used.

R: In your annual report of 2012, it showed repaint as a re-use project and yeah and restoring furniture video, so how did it all start?

I: [08:59] Yeah, I know that I wasn't around then so I don't know when that started. I think that… that was probably more of wasn't a top-down approach. It was a customer (local authorities) requirement to provide social value through contracts through local contracts. It was a… an individual basis for example through the bids when…when a tender came out. Yeah, and they asked us okay, that would have started it plus some customers would have requested it…it would also be associated with [09:59] one of the ways in which we could help preserve resources. Yes, and in terms of who drove that back then it would have been a small committee of people which would have they would have set the objectives that the program of re-use probably would have come more from the see our team and the time as an idea. I'm guessing it's either going to be the see our team or customer-driven. Okay local contracts with working with councils. And I think it's probably the second one customer-driven.

R: So who are your customers the major customers?

I: So I'm having local councils and that's all that's demonstrating social value and being Innovative as well.

R: Okay, great. So do carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.

I: [10:59] so talking about business strategy do marketing does competitor analysis for circular economy produced manufacturing products except resource efficiencies, but no nothing is done on the kind of social enterprise social and physical but in overall circular economy, well, it's more from a competitor. What…what can we offer?

R: In your annual report, you have provided a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?

I: [00:11:59] Sustainability now is so embedded across the business and the business strategy that we want to be reporting on business strategic achievements. Okay the vanity metrics it was when they…when they see our sustainability is now across the business. It's not seen as a separate thing and we're trying to stop that but when the see our program was set up it was seen as a separate thing.

R: [12:59] how do you calculate how much amount of re-uses been done? Is it via monetary or do you measure the volumes or is it both experts both and its measured at the local-level?

I: It's not it's not rolled up into a corporate occasional number so it could be the amount of tons of materials. We use the tons diverted from landfill it…it could be the amount of material saved could be the pound saved as a result of that. So it's all very much done at the local-level. There's no standard do doing regular basis and yearly basis or six monthly bases. We have our annual sustainability report

which you've seen which is going to become [13:59] business report because of integration but where we talk about the social enterprises and the re-use their I mean we talk about the total tonnage recycled for example, because that's your doing business. But for what we do around re-use for social enterprises there don't report the national number unless that was done previously. But yeah, we do we put case studies and be good idea. Yeah. It's what's relevant to make the index more material, but I think they're still not quite getting that. It's not about the number of things you report again. Yeah. It's about what business priorities are, but this will be our first year. We don't report against it.

R: So you [15:59]… you would say that it is something really recent which is embedded within W1 about this behavior about re-use and resource management.

I: To be honest, the re-use in a way that we're talking about is not it's not talked about and less of a it's just something that just done whereas the sort of the recycling and resource efficiencies and preserving resources and circular economy and thinking innovatively about what we can do with resources. Yes, that's very much part of everyday saying it because that's the business strategy and our new CEO she started she has been really talking about this and she's out there talking about it with everybody. Okay, so that is becoming part of the way we talk so less it's less about waste water and energy and resources.

R: [16:59] Okay, so, can you give me the reason why re-uses not as embedded as others?

I: Because obviously it terms of what's making us money. It's taking a resource and turning it into a product and we can sell that product or it's taking…taking something that comes out of a cup make some waste stream that comes out of a customer factory and turning it into energy that feeds back in into that plant and we make money from that because they buy…buy that as a service or it's taking waste and turning it into energy or sending that back to the grid or providing direct heating so that that's what…what is forming a key part of our business now, whereas we use the way that we're talking about it. There's not necessarily. [17:59] that's and that's why we're working with social enterprises. And we're saying take it provides social value. I'll give people jobs. Don't put it into landfill. So there's that money. It's not a commercially viable option.

R: Okay, but do you think that could be it just hasn't been explored. But do you think that if Government I mean a government in their waste hierarchy the recycling recovery and landfill have there are taxes for that and that might be one of the reasons?

I: because we use is not as quiet as a mandatory requirement as recycling recovery and other form of refurbishments.

R: So government is not putting any mandates to re-use is a reason for not being essential part of business?

I: [18:59] Absolutely. I mean when that went a legislation comes in we have to act on it. But
It's not about what we produce it's about what you know for residents produce yes or businesses produce if they I mean it's something that we would look at as part of cost savings for customer. Anyway, that would be one of the first things we looked at. But if it was mandated, what we would need to do is look at if there's any risk, so it it's probably that's actually a good way to look at it. We use now is viewed as an opportunity customers. It's not viewed as a risk as far as I'm aware. It was mandated. It would become a risk because if we didn't do it that may be fine, so we probably need to scope out everything. [20:59] should be re-used and check we're doing the right thing with it. Okay, so it would it would prompt as an assessment of what we're doing.

R: What factors determine the level in which you interact with the TSO? Is there room to do more? Is re-use considered as a long-term practice within your organisation?

I: I don't have an answer for that. It's working. Well, there's no reason to revisit. It's not something that I'm aware is going to be looked at. If there are any problems they do with it on their top basis because it dealt with each relationship is at the local-level. Its look [21:59] it could be by the Contract Manager. It could be by the Regional Communications Manager that they look at that locally. So it might be looked locally but not nationally. Honestly, we report on it and we communicate it as part of our annual reporting. But as a rule, we don't tend to touch those local relationships purely because it's developed regionally or it's developed at the local-level. And there's no need for us to provide input there.

R: Okay. So for instance for instance in future if it becomes National would there be any opportunity or possibility to then look at it from different perspectives?

I: Absolutely. [22:59] for example ex-offenders get back into the workforce. Yes. So we're using them at a local-level in London. That's it contractor or but if we're in that we're going to be mapping nationally who we recruit and we might take that as a National Partnership. We first start working with them. Its pilot project right now in London you could say and it was also fun. Yeah, it's still going if it wasn't it would be replaced with another one. Okay, but there would be some kind of social entrepreneurs attached to any local basis not in nationally if anyone comes up nationally and would be interested to tie up in this kind of processes [23:59] might be to get the buy-in at the local-level might be quite difficult because this they used to running it themselves, but it was certainly be a big it could be investigated.

R: okay, and what would be your comment do I mean recommendation to this kind of third sector organisation who might be interested to be partners with operates in general. What would be your recommendation and in terms of bringing collaborations?

I: make they known to big corporations make the call and match what they do to the business need. So if a social enterprise came to me now in Birmingham and said that we can take this, this waste stream from your Household Waste Recovery Centres. [24:59] But we provide jobs for this we would provide jobs for this to ex-offenders or whoever this is…this is what could do for you. I would…it would make my life so much easier because we're in the process of looking at our social value strategy for our Birmingham contract. Okay, I will don't know which social enterprises are out there. So that's actually money that we have to spend on a consultant or on a person to investigate the social enterprises in the area that work within the local communities that the local council wants to target. So if they came to us is that we tick this box…this box that they need to do research our customers and our waste streams and things but if they came to us and make our life a lot easier, so if they're flexible they're quick and they're located in a proper location here and if their delivery services are excellent than those are they made [00:25:59] born in the same location…location is important is to be local. I don't even think it's about being flexible. It's about be pro-active in understanding the corporation's environmental and social objectives and align or show the business case for what they do and I'm used to those some more act like the social entrepreneurs and not charity. Yes…absolutely. Yes and speak the language of corporations…definitely.

R: with [*anonymous*] charity or other social enterprises, what are the barriers?

I: any social enterprise I've spoken to has been a well-established national social enterprise and they're very good at talking the corporate language. I can imagine at the local-level [26:59] they're probably not as good so yeah, probably more business Acumen. It's something that they… they would need definitely.

R: Do you see re-use as a long-term practice?
I: well, yes I do. I mean I'll be honest if…if we identify of the business identified value in these products currently being going to be being re-used and we're not…we're not getting any financial gain if…if there was a customer requirement or if there was business case, but diverting that away and the business would make money or the customer and make money or there's a little bit of new business opportunity for us. It would be very difficult to put the social value case over [27:59] the business case. I don't know the way it would go. I think if it was now business would roll once we've put our social value strategy and policy in place. Well, that'd be probably a fight on my hands. Is it too early to decide or say anything about definitely I think it's definitely at the moment. There's no reason to change business is changing all the time the value in products and materials is something that we're looking at continuously within this company. So there's always the potential that will be diverted away. I don't think it would happen to this. There are the possibilities. So what happens to those muddy areas for instance the furniture that comes from household or other businesses and the paints and all this material was for instance of that goes for Recycling and Recovery or anything like that or incineration it all. [28:59] the cost model business rather than if…if any social entrepreneurs is ready to come and collect for free and take it away and then they can resell it so that there could be the might be an opportunity like that. Yeah, I mean that the cost savings. Yeah, probably very small, but they are costing the business case would be the value. If this situation arose in the future there was a business opportunity the business case would probably be social value and cost savings versus the value of this new waste stream, whether it's being recovered where it's being recycled where it's being turned into another product. Yeah, that would probably be them that balance. I don't think in terms of furniture and things like that. [29:59] its not huge quantities at all. We're working with industrial customers to re-use paint that comes out of their factories, but that's very different because it's paint that's just been made and it'll be remitting every kind over the details behind it. Everyone's largest. It's remanufacturing of the bank. Yeah, but that's a bit different from this. Yeah. It does it does it does more into prevention preventing the top hierarchy of the waste your preventing

how to prevent from going to do what do you like look in an organisation to consider it as a potential re-use partner.

R: So of what are the mechanisms are what are the things that you look for when you partner with TSOs?

I: [31:14] I was not there, but I think it would have been reliability, it would have been not sending the stuff to landfill. It is most important thing they would not do because they are told to pay but it is about being responsible and doing what they said. I think back then it would have been more about that then social value.

R: What do you look in an organisation to consider it as the potential re-use partner? Is there any form of checks or assessment?

I: No, we look into their work and reports but there are no audits as far as I am aware of it. Also with regards to the relationship maintenance it is done at the local-level and depends upon project to project basis.

R: Are there any misperceptions or value action gap in regards to handling re-use? How is this dealt with within your organisation and supply chain?

I: I do think it is embedded as far as we do not want things to go to landfill. We want to move up the waste hierarchy. So probably it would be unfair of me to say that it is not embedded. All the sales and account people they talk of moving up the waste hierarchy. It is embedded it is just that the business and money is elsewhere (recycling, recovery). Customers want us to save money if there is opportunity to lower cost then they will talk about that. I do not know if they will specifically talk about re-use but it will be more about recycling and recovery. With regards to our suppliers whether they have circular economy embedded that check is not done. We are at the moment looking at our sustainability strategy and are looking at the risks and opportunity with supply chain are. [36:41]. that is something that we will look at. But it would not be the check that we do of our suppliers. We do have a company that we hire to get eco-advice and they also look into our manufacturing suppliers who are of high risk. There will not be specific checking on re-use, recycling, or recovery of the suppliers but we do check the overall sustainability.

R: [38:24] Operational re-use materials / materials from renovation/refurbishment or moving such as building materials, furniture, fixture etc., does waste policy apply to them? Please elaborate. How such non-core business materials/waste is dealt with?

I: Most of the facilities we have all over the UK are rented. There are very few case studies but we do look into the materials used as an element to building design along with energy efficiency. Re-using materials will not be applicable for us. I would also like to add that for us re-use is a very tiny part of our business as our core business is recycling and recovery, so we do not really get involved or think about re-use activities unless it is a necessity asked by our customers, which only happens at the local-level.

R: Would you like to be anonymous?

I: Yes

Thank you [42:00]

Box 9.6: Telephonic interview with T10

R: [00:00:00] recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: [00:00:59] it is 100 per cent because our organisation exist to promote re-use.

R: [00:01:59] the definition of re-use does that share with your definition? What is the specific understanding of re-use?

[00:02:59] no the definition does not match with the government definition of re-use. What we term re-use is the materials that we turn up for up-cycling where they increase the value of the product. For example, they might get a washing machine and turn that into a garden ornament or a table of something different. To my mind that still stops the product to going to landfill and waste. Re-use in a slightly different purpose. So I disagree with the government definition.

R: do you think that the definition needs to be refined?

I: yes, I do.

R: How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: theoretically they are the core of re-use in London. Because lots of items comes from local authorities and they are fundamental in prevention and re-use.

R: In general they are important what role do they play within your organisation?

I: they are one of the corner stone of our engagement strategy. Financially local authority is about 1/6th of our turnover by general priority for us they are probably number 1. That is because in theory it is one thing but getting engaging with them and working is different matter. Generally speaking they talk rather walk to walk. With our engagement we are heavily involved with London Borough of Waltham Forest and the London Borough of Ealing. Those boroughs engage with us to use all of our strength to improve re-use.

R: [04:59] how did the T10 started? What was the agenda behind initiating?

I: [05:59] what I would say is it was a bottom-up approach the way it came around. T10 is part of the London Community Resource Network, who broadly speaking is the organisations that connect the people within community who wants to do work towards resource efficiency. They are very strong in lobbying the local authorities to motivate them to do various activities related to managing waste. The challenge was to pull 5 to 6 local authorities together and one of the local authorities said that instead of you guys playing as sideline why do not you put a proposal demonstrating that you could do it better. After that the charity spend up to a year and a half to come up with a proposal and a methodology, which was then presented to the London Waste and Recycling Board, which attracted in total some £5m of funding. So that is how it all happened and it started after 2010.

R: how do you measure achievement?

I: [07:59] Funding is conditional. The number of tons of material that we collect, the amount that we re-use, and the remaining goes to recycling. The types of materials we re-use and the number of jobs that we create, training places that we create, and other opportunities we create and also the number of people who use our services. These are the things that we measure.

R: do you have your own measuring tool?

I: [09:59] we have a third party organisation who calculate and measure all types of materials that we re-use our members are there so they are able to capture all the details.

R: what are the initiations in terms of collaborating with other organisations that are dealing with community level re-use?

I: LCRN is a network that comprise of individual organisations whether it's a charity or social enterprises. What we do is we coordinate with their activities and their products so that we can handle all the activities between us. So for instance University is a good example where students when they go home they will leave cloths, cups, shoe all different types of small items. We collect products

from about 15 universities in that there are about 60 to 70 Halls of Residence. We then weigh, measure and report back to universities, we then use our partner through the LCRN to distribute our products. For example people specialising in furniture, specialising in appliances etc. we distribute these items among them. So we act as a one shop stop where we take all the items from different universities at one place. With local authorities we understand what they want to achieve and based on that we will supply 2 to 3 partners to supply for their service or speciality service that they are looking for. We can coordinate with the expertise organisations increase their exposure.

R: [11:59] Do you coordinate with national-level re-use charities such as T11, etc.?

I: [12:59] with T11 I will give you an example that they are partners with R0 whereby they collect items form R0 that has come back from the customers as part of their take-back scheme. With others they are more of a high street charity shops. The services they provide they are very picky with collection. They will only collect the good quality items. What we do is we take all the products we take everything from the customers. We re-use what we can and we recycle the remaining that is slightly different from what we do and what they do. But I am certainly collaborating with [*anonymous*] they are very collaborative but they only deals with textile and hardware so what I am trying to do with them is ask them to take appliances like microwaves etc.

R: what are the opportunities or challenges you face with all these collaborations?

I: [16:59] it all depends on the types of materials. So majority of partners that I have got handle furniture and appliances. But now I have started collaborating with people who have got bikes, sales books, bric-a-brac, and full appliance remanufacture. As we do weird and wonderful things with it. So, in terms of collaboration for example we are meeting a housing association who wants to re-use the items from void clearance properties. They have around 700 of them a year. They also want their residents to know about the organisation who can get them the cheap furniture that they can re-use. In the local area near to that housing association we have a partner with a shop of around 200 sq.m., they can deal with some but they do not have the capacity to take all the items from void clearance, but I do know a depot nearby who can do the void clearances. So this way we have one partner who can supply void clearance and we have one partner who can supply furniture and white goods and they can be delivered to residents home. I would say this is the most effective way for council to get the service and for the local organisations as well. So it is a win-win.

R: Yeah, okay. Hmm, so won't you see I mean, how do you see space as a barrier or do you see it as a barrier?

I: [18:59] space is the barrier. Yes. This is because we take all the types of stuff. We sell those that can be re-used but we also recycle that cannot be sold and we pay for that service. We do that to give training to the people to learn things to re-use and up-cycle. So most of our partners are the organisations that are focused on providing training to the people and have social benefit as the main motto. They try to put something back in into the society. So rental cost is the big factor as it is about 40 per cent of the sites operational budget. So for example if we have got 100,00 sq ft of space in London it will cost £0.5m a year as rental cost. Paying that much money for a re-use organisation is very difficult. So what i do is i try to negotiate with local authorities where they have got development properties that takes around 2 year time to get developed ask them to give in the form of tenancy agreement. But these types have very short tenancy agreements that last say for 12 days. But we do take that where we have got a big opportunity and we want to store the items for some period of time. So property cost is the big issue. Interestingly this form of thing works in America, but when they came to London to understand if they can have the similar model and found out the rental costs they said our model cannot work in London.

R: [20:59] Yes, yes. Yes. So do you think that if you explore outside London, that would be much easier and in expanding T10. Is that in your pipeline?

I: [22:59] Because of our organisation focus, we try to make it work in London and not outside. I will give you some examples there we are trying to develop a deconstruction mattress plant because the amount of mattresses that we get from London throughout the year most of them goes to landfill. The cheapest property that I can find in London is in West London where the cost is £5.80 per sq. ft. and if I put the plant in Kent I get the space for £1.20 per sq.ft. And we need about 20,000 sq .ft. is around 90k a year excess in London to operate that plant. It will leave us with so little margin as in terms of miles to get the time, congestion charges applied, in terms of foot print from all over the London as we make sure that most of our services are local. So realistically this sector works if it as got local authority support. Logistics is also a challenge but less than the space or property.

R: [23:59] Space and logistics and nature of re-use are the challenges that becomes barrier for re-use to grow. This is even true from corporate perspective.

I: [24:59] It is interesting that corporate see us as charity that that is why they give us stuff with that intention, but what is required is they need to see the value. Also most people have wrong perception of what is called re-use as will they buy the stuff in same condition? People will have different reactions. What happens at the business level is to optimise their service they handle their own items to the extent they can and we are called in to handle the crap. The challenge for us is to present ourselves as a viable first call organisation rather than a fifth call organisation. So what they do is look up for waste organisations and then at the end when they are left with items they will look at charities as the last resort.

R: Do you think it could happen if government enforce re-use as a mandatory requirement within organisations based on the nature of business?

I: [28:59] from my perspective I am not a great believer of legislation. I think we already have too much of legislation. Government should make policies and charge sectors for solving their own problems. Charging the companies who produces white goods appliance the some cost of disposal and getting fine in throwing of mattresses can help solving the problem. So instead of making re-use mandate as it could then encourage people to buy less re-usable items the solution is to penalise people for waste.

R: [30:59] Within T10 is there any misperceptions or value action gap among staff and supply chain in understanding re-use? Is re-use embedded within staff and supply chain?

I: [31:59] staff and supply chain yes, because that is our core activity as that is what we do and make our living.

R: [33:12] Okay. Thank you very much Bye bye.

Box 9.7: Telephonic interview with M1

R: [00:01] Yes. We can start it now. Do you have questions in front of you?

I: Yes.

R: Ok. Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How? What is the specific understanding of re-use? Does the government definition of re-use share with your definition?

I: [01:11] Zero waste to landfill is embedded in our environmental policy I would say we do follow it at our organisation. But, with regards to the definition of re-use no, I would say it is waste as we do not take good materials and re-use them, but we take some damaged items which historically would be classed as a waste and then that will be sent to re-use and recycling facilities for someone else to use it in some form.

R: [02:01] How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: [02:23] In terms of managing re-use not at all. They do not play any role what so ever in managing re-use in our business.

R: [02:35] the government is silent on unsold stock/materials issue. How do you classify it? Where would you place it in waste hierarchy?

I: [02:40] I classify it as unsold stock.

R: but, do you consider it as re-usable material or as a waste?

I: [03:01] It would classed as, because there is a value the commercial value so you would go down to the process whereby you will write down that material so that in future if we are out of space and economically it is not viable to store it. We have 2 choices one is either dispose it whereby you pay for the disposal service. Or if you are happy with the material you check the quality and send to re-

use. So at that point it is either classified as material that can be re-used by someone else and is classified as waste to the business as it has no business value to it.

R: [03:24] to manage these materials do you collaborate with any charities or TSOs to take those unsold stock and re-use them?

I: [03:41] we do have a program whereby we tend to send the perfectly good material to a group. For example for the marketing purposes it goes as samples and things like that. Also, if material is in good condition I will call local charity for them to re-use the materials if they want to and the quantity they want. They will then distribute those materials to people within the housing associations. So in that sort of context materials that would have been waste gets re-used.

R: [04:46] in that sort of context what was the inspiration and or initiative behind getting involved with these type of charities and third sector?

I: [00:05:11] it was the realization within the business that we are responsible employer and the impact that we can have in the local community. It was about we are doing the right stuff and it's all about corporate social responsibility and that sort of thing. There was also a realization somewhere around 2012 that you know what it is also good for business in terms of money because if I can not re-use it then what I am going to do with it is paying somebody to dispose that material. So it's giving that material the second life. They get benefit of getting a perfectly good material free of charge and I enable to save the disposal cost. So everybody is happy. So it is win-win all the way around.

R: [06:57] at what level did you start this initiative?

I: [07:09] we started at a middle sort of level from the people who were dealing with it few years ago somewhere around 2012. Then of course when you share with management what you would like to do then you get approval to proceed from the management team. So we have recycling and the management team and we brought the 2 parties together and then I go a contact people who make links with local groups.

R: [08:25] Do you carry out any form of comparative analysis with competitors? Please elaborate.

I: [08:45] No we do not in terms of re-use and also not in general to assess our waste activities. Because all business are different and it will be complete waste of time to be honest. So we do not do that.

R: [09:11] how do you measure your re-use or recycling achievement?

I: [10:07] we measure by looking at all the sites the amount of materials that they are reusing or recycling. The way we measure our own performance is the waste that is produced at our own facilities we class that as re-use and if the waste is transformed to another unit where they use as raw material then we class that as recycle. If it goes to external party or third party then it is classed as recycled. So we measure the amount that we re-use i.e. within the same facility. What we able to recycle within the group and what is recycled by a third party as well. And obviously the material that does not get segregated goes to landfill. We have complete overview of where that material is going through.

R: [10:54] Do you have your own measuring tool?

I: [11:23] the tool that we currently use for measuring the performance is GRI reporting index. For our 2013-2014 performance you can look at our website.

R: [11:45] how optimum would you say collaboration is with local charities at M1 and do you consider it as long-term partnership?

I: [12:35] I think it is difficult to say in terms of long-term and also difficult to say in terms of how optimum is the collaboration. I think it has to put in the context of understanding the market and you have to understand that the amount of materials that we produce. So we are a manufacture and we manufacture in excess of 50 million sq. m flooring a year of different types and that goes throughout the world. People in the UK if i go to them and say that I have some 50,000 sq.m. of flooring that I can give to you whereby you clean it, sort it and use it and I will pay gate fees doing that is because it is alternative to landfill and incineration they will say we cannot have that much material. The problem and challenge for whole industry is to match the scale of re-use or the percentage that can be re-used. These kinds of people will be unable to handle that as the amount they handle is a fraction

of the total that we produce. I do not think that it is a close loop system, it is absolutely not. I would be very surprised if they would handle 1 or 2 per cent of the materials all over the UK.

R: [14:15] is it because they are very small scale charities? Do you think if government make mandates for re-use this could improve?

I: [14:39] I think it is going to grow yes. But it all depends on the type of material. So if it is a traditionally made carpet it is easier to re-use but if it a carpet with PVC or vinyl backing then its age deteriorates and what comply with the legislation right now might not comply in 10-15 years down the line. So there is a problem as the materials we use now in 10, 15, 20 years they will be in the band list due to changes in legislation. So we got this continuous problem of what actually we can do with these aged materials. Nonetheless, in terms of re-using the materials and giving them the second life it is about people's aspiration level. The people at the lower end of the society in terms of wealth may be grateful to get some material that has been cleaned and refurbished. But, people would buy a second-hand car but they won't buy a second-hand piece of carpet. It all depends on the type of product and how people deal with it.

R: [16:51] May be carpets cannot be re-used by households but how about reusing in commercial context or parks etc?

I: [16:54] Commercial sector I would say that you are right it can be used by social sector. So for example if you are looking at a local charity shop and they can have second-hand re-usable carpet to put in their floor by giving it a second life. So these kinds of local schools, local community centers whereby these materials can be re-used by donating them. It serves their economics as well as instead of new material in their floor they can pay fraction to buy second-hand which looks nearly the same and they say yes they are fine to use it. It's like people of housing association, if they have got concrete floor I can say to them that i will give you flooring that will make it more comfortable and warmer environment for you and it will cost you a small fraction of the price then that is where it can work yes.

R: [18:34] what is your message for these kinds of social groups and community groups from a corporate point of view?

I: [18:46] I think to carry on the good side that they do provide an excellent service. But, they need to realize that in terms of the volumes that they're getting through is too small to remain in the commercial world, which comes up with a bigger solution. Unfortunate, using their service tends to be in dilemma because when we as a corporate wants to get rid of our materials we look for big-scale options. Because right now most of it goes to recycling companies who can take it all and get it recycled. But, if re-use organisations come up in that scale and take all with them then recycling will not have much to take away.

R: [20:31] Do you think that re-use can be a threat to recycling companies, if they start getting more business out of corporate?

I: [21:09] it depends on the quantity they can manage. Right now they take very small quantity and first of all where they will store the material? If I have to put some materials for 10 years here in our facility then I would really struggle as in 10 years I will not know its reusability and where to put the material. Recycling will not take it all and the best option will be waste to energy or something like that. I am afraid that is the way.

R: [22:25] so would you say that as a manufacturer this re-uses market is very small to be working on a long-term basis?

I: [22:39] Re-use people will never ever going to reach the level of recycling service people. They will always going to be there at small scale. They will have a small world and they will never be able to take out everything that the manufacturers. No…No absolutely no chance.

R: [22:51] if re-use organisations wants longevity with manufacturers such as yourself then would you aim to move up the waste hierarchy and give first chance to re-use before recycling and recovery?

I: [23:32] as a business we want to sell stuff and we do not want people to come and say to use that we want to re-use stuff so it will be only at quota basis. But, if that happens and the market change then absolutely we will response to it and work with it.

R: [23:54] is there a possibility that in future if re-use grow then it could become a cultural norm and or behaviour within M1?

I: [24:27] No…No it cannot. Re-use is only 1 per cent that is all you are looking at. It will never going to grow, it will never provide me with 100 per cent solution. Because straight away the market will have to double in size. If that happens where we get say 100,000 sq.m. of order where someone wants to re-use the material then we will put that in place. What will happen in the future as the circular economy grows is people will want to get the remanufactured materials to use as the raw materials. Absolutely so I think that is the way I think will go on with time. Having said that there will be a small group of people and small group of companies that will continue to do re0use but that will be all. It will be a niche market but in terms of mass no.

R: [25:51] But you will follow the circular economy path whereby using more of recycled and reprocessed materials rather than virgin materials.

I: [26:22] if you look at our report you will see that we are heavily trying to move that way. Yes, going forward that has to be the way as materials are going to go scares and if you do not recognize that then you got a problem. It is not easy to say that all products can do that because there are issues depending on from where that material comes from.

R: [26:57] would you say that this circular economy behaviour is embedded within the staff and supply chain in M1?

I: [28:30] I would say that circular economy is the term we tend to use at the M1 yes.

R: [28:42] would you like to keep your name anonymous?

I: [30:09] yeah thank you

Box 9.8: Email interview with R2

R: Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: Yes, our annual review indicates that we are on track to hit more than 70 per cent of our challenging sustainability targets. Since 2007, we have found ways to reduce the impacts of our own operations as well as by finding ways to help customers make their homes more sustainable. The aim of the annual report is to review the progress R2 has made towards its environmental commitments, highlighting both achievements and areas where progress has been more challenging. In two areas - cutting carbon emissions from business travel and reducing employee time lost due to accidents - R2 has exceeded the agreed targets or is on course to meet them well before the set deadline. Finding alternative solutions for bedding plant products was identified as a focus for product development, supporting a number of environmental principles including Zero Waste, Natural Habitats and Wildlife and Sustainable Packaging. In response to Climate Change Act 2008, it was then when we launched an effective delivery plan for a new sustainable initiative towards reductions in cost and carbon emissions.

R: Government definition of re-use is *"…buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed)."* Does that share with your definition? What is the specific understanding of re-use?

I: No R2 line on what is meant by re-use is different.

R: How critical is the role of Local Authorities in terms of managing re-use at your organisation?

I: Not relevant.

R: The government is silent on unsold stock/materials issue. How do you classify it? Where would you place it in waste hierarchy?

I: Items and materials that we are unable to sell that may become waste we apply following options:
Option 1: Sell the items first
Option 2: Donate to a local community group using the Waste Donation Scheme. We donate unsalable products and waste materials for re-use by recognised community groups, eg schools,

charities, The Scout Association. We can donate items such as slightly damaged tins of paint, off-cuts of timber, and broken tiles for mosaic projects. The recipient is responsible for ensuring that unused items are disposed of responsibly. It is company policy that health and safety is taken into consideration, therefore electrical, petrol and gas items are not available for donation. Any waste or surplus stock offered is done so on the guarantee that it will not be re-sold.
Option 3: Recycle

R: The research shows that change in an organisation takes place at any or every level. For you can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation?

I: It came to our organisations from both top-down and bottom-up approach in 2011 through request from local stores (staff survey). Waste donation was organised centrally following requests from stores. Our Waste Donation Scheme - links stores to local community groups to re-use materials. All stores can use this and most do. To re-use unwanted IT equipment we donate it to T9, a social enterprise. Almost 300 tonnes of unwanted wood has been donated to date to T5. Timber used to be delivered on one-use treated timber bearers. These are now uplifted by the vendor instead for re-use - as timber bearers.

R: Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.

I: Not applicable.

R: In your sustainability report, you have provided a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?

I: We measure via reducing waste to landfill. In the autumn of 2013, T7 was invited to take a sneak preview at our biggest product innovation to date, which has reduced peat use by 95-99% across c.140milion bedding plants and replaced 22,500 cubic metres of polystyrene which placed end to end. These technologies are also helping to reduce costs and carbon emissions by reducing packaging volume by 50%, enabling a 30% improvement in logistical efficiency. Our Director of Corporate Social Responsibility at said: *"At our inaugural growers summit we laid down the challenge that we wanted to be finally out of peat and polystyrene in bedding plants, following years of trialling different forms of packaging and tinkering with lower peat formulations. The solution was a remarkable innovation."* Other achievements included in the Sustainability Review 2012/13 are:

- 100% responsibly sourced timber in all products
- Over 17,000 staff trained in sustainability
- Our Energy Saving made 5,000 homes more energy efficient by installing boilers, controls and full heating systems
- £750,000 donated to nominated charities
- 72 range sustainability ratings completed; an internal mechanism to deliver product improvements and supply chain improvements on ethical and environmental issues

R: What is the inspiration behind re-use initiatives and collaboration with TSOs?

I: T7 developed the environmental and sustainability concept that we adopted in 2007 for our programme. The charity is involved in each of the goals indicated above.

R: How optimum is the collaboration with TSOs? Do you consider it a long-term partnership? If yes, what make you to wish to do more? Do you consider getting in partnership with other such organisations?

I: Our partnership with T7 is long-term and successful. T7 are now also doing more with our parent company, [*anonymous*], on delivery of the sustainable programme. This programme is our sustainability ambition. It means innovating in our products and services to enable our customers to have more sustainable homes; transforming our business to have a restorative impact on the environment; and making a positive contribution to society and the communities in which we operate. We also work with the Ellen MacArthur Foundation and have undertaken a trial with other organisations. Yes, happy to work with more TSOs provided that it is in order to deliver a clear re-use objective. For example a partnership between R2, T7 and [*anonymous*] celebrated a number of successes: 10,900 hectares of previously unmanaged woodland now has a sustainable management

vision and 300 woodland owners have received a Woodland Star Rating, assessing the ecosystem service benefits of woodlands to wider society. But any ambitious sustainability plan will face challenges along the way and this is true of our commitment to make the deep cuts in carbon emissions. Reductions have plateau in recent years, despite having come down by an impressive 97,000 tonnes or 31% in 2013/14, compared to the 2006 baseline. To hit the target of zero carbon stores by 2023, firm investment plans are needed. Looking further afield at our supply chain of over 400 suppliers at tier 1 alone, there is still the potential to improve ethical and environmental standards. Recent innovative technologies we adopted are a great example of an initiative that addressed many areas of sustainability, an approach that we hope to see replicated across other major supply chains in the coming years. Chief Executive and Co-founder of T7, said: *"R2 still remains one of the few retailers with an operational carbon reduction goal that is in line with climate science. T7 is proud to work alongside a team which strives to work within planetary boundaries and achieve the stretching targets set out in this environmental report."*

R: What do you look in an organisation to consider it as the potential re-use partner?

I: Find out what items/materials we have before asking to get involved.

R: It must be incredibly difficult to predict how much stock you are going to sell. Clearly, you want to reduce the waste:

c. Is unsold stock part of policy?
d. How far do you deal with unsold stock?
e. Is it important whether it goes to re-use chain or not? Why?
f. What happens to that stock? Do you have targets against which you measure for unsold stock? Please elaborate.
g. Are those targets working? How do you review those targets?
h. Do you have it written up as a case study? Please elaborate.

I: We aim to sell as much of the stock we buy as possible. In a range review, we try to sell first as clearance. In many instances, the next stage will be for vendors to uplift what is left for re-use or recycling. What stores are left with may be donate-able through waste donation. We don't have a number for re-use.

R: Is re-use considered as a long-term practice within your organisation? If yes, how do you maintain it?

I: As it is usually cheaper than recycling, yes! Yes re-use is embedded within R2 and its supply chain network since it makes both financial and ethical sense.

R: In your organisation how do you see value action gap as part of re-use initiative? In other words, are there any misperceptions among the staff and supply chain in regards to re-use?

I: Time and logistics are usually the difficult issues. Based on the availability of time and logistics we prioritise the waste management. We cannot store items in our stores for long thus some time because of the space, time, and logistics constraints we have to prioritise recycling over re-use.

R: Do you wish to keep your name and your organisation name anonymous in this PhD research and publications to come?

I: Yes please.

Box 9.9: Email interview with T9

R: Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy? How?

I: Although The Society has a comprehensive environment policy, the recent waste directive and zero waste to landfill is not currently embedded within it - this policy is reviewed annually in July of each year, and I would expect it to then be included T9 has had a "zero to landfill" in its ethos for the last 3 years, with the encouragement of R2. All equipment that comes to us is either refurbished and sold for re-use, for which we have a T11 Exemption to our Environment Agency's waste processors licence or it is dismantled, segregated and sold within the same Agency's Hierarchy of Waste, for the reclamation of various types and grades of metal and plastics.

R: Government definition of re-use is *"...any operation by which products or components that are not waste are used again for the same purpose for which they were conceived".* Does that share with your definition? What is the specific understanding of re-use?

I: In essence we share the Government definition but we define it as - the physical refurbishment and sanitisation (from a data erasure viewpoint), of a pre-used item that is considered disposable by an individual or company, but is fully capable of further use in the same capacity as they were originally produced and sold.

R: How critical is the role of local authorities in terms of managing re-use at your organisation?

I: We are really pleased that sections of the local authorities in Southampton and Hampshire are regular donors of redundant IT equipment. They supply fairly large amounts of good quality, well looked after equipment from schools and offices that yield a higher than average re-use percentage. Going forward we are looking to become more involved in taking IT "waste" from Local Authority waste sites, but it is proving very difficult to achieve this because most sites are operated by other much larger generic waste handlers - hopefully the current tightening of landfill regulation will encourage them to seek partnerships with specialist operations such as us. We would expect that the LA's will seek to enforce this more when they let their waste site operations contracts.

R: The research shows that change in an organisation takes place at any or every level. For you can you give me an example of you being one of the leaders in re-use, so how the re-use strategy is coming to being in your organisation?

I: T9 generates a financial surplus - all of which is retained by the The Society to further their work on behalf of the homeless and vulnerable members of our locality - many of whom are or have suffered the effects of drug, alcohol or other substance misuse or mental health issues. We offer opportunity for employment, work experience, repayment of community service sentences and volunteering to those who would not normally be considered as "useful" in the conventional capitalist business model. On behalf of The Society in general and T9 in particular, I belong to the largest business networking organisation in the world (BNI) and am constantly evangelising the need and effectiveness of re-use - and more specifically the benefits to the disadvantaged in getting their lives back on track in participating in our work, people who could never afford PC World prices being able to purchase low-cost technology, and the benefits to the environment. I firmly believe that re-use is embedded within The Society's ethos and generally issues from mid and higher-management levels, which then is incorporated into normal practice. We operate from a 4,500 sq ft warehouse unit and our weekly disposal of empty steel cases from dismantled computers is between 1.5 and 2 tonnes per week.

R: Do you carry out any form of comparative analysis with competitors in terms of re-use? Please elaborate.

I: Not applicable

R: How do you measure re-use or recycling achievement?

I: As a registered waste processor with the Environment Agency we report every quarter into their system, which splits re-use (i.e. the product refurbished and resold) against the product that is broken down for recycling in both the hazardous and non-hazardous waste categories. We also keep our own records of donated product re-use versus recycle.

R: The inspiration behind re-use initiatives and collaboration with R2?

The re-use initiative with R2 started 5 years ago as a result of one of The Society's fundraisers talking with R2 Head Office (R2 are of course Southampton based) about what initiatives could be developed to support The Society. So beyond the normal sponsorship of events, we asked if we could arrange a day where we could collect their employees old IT equipment - this worked well and got the interest of their management who opened up discussions about donating their redundant IT kit as and when it came up for replacement. This relationship developed with R2 and we were introduced to their parent company - which became responsible for the supply and disposal of IT equipment for their parent company. We enjoyed a good relationship but as the volumes of equipment increased the parent company IT Security Manager became involved and decreed that all hard drives had to be removed from machines being donated to us, which really reduces their value to us. They also have started using a large IT "cradle to grave" company for the supply, management and disposal of IT equipment so that their donations to us has decreased significantly over the past 12 months.

R: How optimum is the collaboration with R2? Do you consider it a long-term partnership?

I: From the above you will see that the arrangement is far from optimum with R2 but we are grateful for their support generally to The Society which continues.

R: What makes you to wish to do more? Do you consider getting in partnership with other corporate?

I: Our experience is that partnerships with corporates are great during the early days of a relationship - we have enjoyed several such relationships - but the pattern is always the same - as soon as we become a significant player the IT Security Manager gets involved, and being risk adverse people, impose rules that restrict what their organization can donate to us. This is despite the fact that we use industry leading data erasure software that id both Ministry of Defence and NATO accredited. The standard mantra (excuse) is, that we are a charity and how could they sue a charity if anything (data leakage) went wrong. We have taken this on the chin and increased our business year on year by targeting donations from local authorities, SME's, the professions and the public.

R: A message for corporate in general from a Third Sector Organisation (TSO) point of view to make re-use work better?

I: Trust us! we may be a Charity but we have never had a data leak, we are authorized and audited by the Environment Agency, we use robust processes and procedures, we use industry leading data erasure tools, we are in the process of getting accreditation to ISO27000 - Data Security. We want and do everything possible to be a growing solution to an ever-growing problem, and benefit the community and environment. We will do everything within reason to meet your requirements, we may be a Charity but we expect to be treated with usual commercial regard and terms - we don't hide behind our charitable status. We do and can always provide a professional and valuable low-cost service.

R: In your organisation how do you see value action gap as part of re-use initiative? In other words, are there any misperceptions among the staff and supply chain in regards to re-use?

I: This is interesting, because I think that we have moved a considerable way from being a disposable minded nation, although there is still a long way to go! Firstly we developed into more philanthropy were there was a general misconception that re-use was a mechanism to offload older equipment / materials to the poor to help them in a charitable way to where we are now. There is a much wider appreciation that re-use is good, it benefits many areas and people, and it should be encouraged from a multitude of standpoints. However this has not yet permeated the whole of our nation and much work needs to be done to drive re-use to become the norm rather than the exception.

R: Do you wish to keep your name and your organisation name anonymous in this PhD research and publications to come?

I: No, feel free to use my and the organisation name as you see fit.

9.4.3 Semi-structured Interviews Nvivo Coding

The tables below in this section provide the Nvivo coding a of semi-structured interviews, which is demonstrated in line with the pro-environmental framework CEBA, as illustrated in Chapter 4 and Chapter 6.

Table 9.5: High Means Control (coding)

Organisations (Interviewees designation)	**Waste regulations**	**Re-use**	**Local Authorities role**
Questions	*Recent waste directive and zero waste to landfill. Is it embedded in your environmental policy?*	*Government definition of re-use is "…buying and selling whole used items, possibly after washing or minor repair (other terms used, particularly in the construction sector include reclaimed)." Does that share with your definition? What is the specific understanding of re-use?* *The government is silent on unsold stock/materials issue. How do you classify it? Where would you place it in waste hierarchy?*	*How critical is the role of Local Authorities in terms of managing re-use at your organisation?*
R0 (Group Manager Waste and Water Resource)	We progressively reduce the waste we send to landfill. Very little of our waste goes to landfill, partly because we can recycle quite a lot. We recycle food waste from R0 through the process called Anaerobic Digestion. From a business point of view we want to reduce the cost as it all comes down to profit, but we make sure we do not do fly tipping. The key thing is legislation that drives what we do since we must remain within the law otherwise all of our reputation build-up can be lost. Legislation can be a powerful tool to drive change and improve. Best example is WEEE directive to recycle batteries.	For us meaning of re-use is same as given by the government. We consider unsold stock as re-usable. If there is a government legislation to promote re-use rather than recycling it got to start at very beginning, with those who make the products (manufacturers). Because they have to manufacture with a thought of how easy is it to repair, upgrade, to replace damaged parts. Then suddenly the whole industry of repairmen would be reintroduced. That would be good for employment, industry everyone will win.	Local authorities do not play any role in re-use projects. It is limited to our customers at household-level.
R1 (Senior Director for Sustainable Business)	The sustainability policy we have is no waste to landfill ambition.	Re-use is quite tricky at the moment which is about circular economy at the moment which is kind of high-level strategy rather than more practical. We define the unsold food products as waste other people may define it as re-use but we consider it as waste. If there is a government legislation to promote re-use whether it will work or not will depend on how it is framed. As it was done by escalating the landfill tax it put the organisations to look for the investments to avoid landfill. It was cost-effective to put recycling facilities then sending the waste to landfill. I have not seen any consultation or draft that says there is any charge or levy on recycling. It is all just concept at the moment than actually develop a clear strategy which can be physically implemented.	Local authority plays no role at the direct level in terms of re-use, it may be taking products from the T4 (organisation) but do not deal with us.
R2 (Sustainability Specialist)	The zero waste to landfill policy is embedded in our annual review produced by our partner T7. The only policy we have is reducing waste to landfill. If there is a government legislation to promote re-use then it can enforce organisations towards re-use behaviour.	We do not have any definition of re-use. But we consider unsold stock initially as re-usable since it has economic value; the remaining is donated to receive social value and left is waste.	Role of Local Authorities is not relevant to us.
R3 (Store Sustainability Lead)	We have made a commitment to divert any waste from landfill by the end of next financial year. We know that it is different when it comes to meeting the goal. We comply with the waste hierarchy requirement of reduce, re-use, recycle, energy recovery and landfill.	Within our organisation for a long time we have the recovery department who takes care of re-use. Because of the volume of stuff we are shifting from display and handling in the logistics there is always a risk of some damages and that is re-used by our recovery department.	Not applicable

R4 (Head of Sustainable Business)	Part of our sustainability plan is to comply with legislation which is in our corporate goal and is separate from our company policy that is to send zero waste to landfill.	The unsold stock is considered as re-usable since it essentially retains its indented value only monetary value has declined.	Local authorities do not play any role in re-use projects. They play role with our customers in take back scheme at household-level.
C1 (Head of Sustainability)	We have our group policies, and then we have different units of the business which operates slightly differently. The construction side of the business have a target of zero waste to landfill. However, in fit-out we decided that while ideally we do not want anything to send to landfill we do not see incineration as a suitable alternative. So, our targets are around maximising the diversion from landfill through re-use and recycling wherever we can. If there is government legislation promoting re-use it would enforce organisations behaviour towards re-use to certain extent because most organisations start to do something only if it becomes mandatory. However, from government point of view it would impact the economy of waste industry, manufacturers, and retailers. So there could be an argument from the wider industry for not to enforce re-use as mandatory. Government cannot mandate it if it cannot enforce check on it, so it can only become a best practice target for something like BREEAM, LEEDS or SCAR, where you get the better credits for doing it. It can be easy win or a cheap win. So, incentivise rather than mandate it.	We would not consider the government definition of re-use as our definition. We consider any form of re-use if it is in the same format and is not been reprocessed even if it is used for a different purpose that is just as good.	We do not deal with local authorities at all.
C5 (Sustainability Manager)	We have number of targets in regards to waste. Our main target is that 98% of waste must be diverted from landfill. It is one of our policy targets set by the board. Same policies are applicable to the operational waste.	Re-use to us is not only about environmental savings but not putting out for waste is also cost savings. We consider any form of re-use if it is in the same format and is not been reprocessed even if it is used for a different purpose. The ultimate product can be used for different application.	Council as part of government say you need to do the BREEAM and Green building certification to say it is very good. Under BREEAM there are waste criteria as well and that is driven by local authorities. There role is to enforce the BREEAM assessment which will encompass everything to deal with waste. So it is quite a big role because at the end of the day you have to meet certain amount of credit and you need to tell how you are meeting those credits.
W1 (Head of CSR)	What we are talking about there is the services that we provide to our customers. So we have environmental and legislation compliance team and they advice on how the directives and legislations needs to be communicated to the customers and is integrated in our services so it touches quite a lot of people.	If there is a government legislation to promote re-use then it can enforce organisations towards re-use behaviour. Because when legislation comes in we have to act on it. But it is not about what we produce it is about what residents or local businesses produce. It is something we will look at as the cost savings for customers. The best way to look at it is; re-use now is viewed as an opportunity with customers it is not viewed as risk but if it mandated it will become a risk because we would probably need to scope out everything potentially that can be re-used and check that we are doing the right thing with it. So it would prompt as an assessment of what we are doing.	They are our customers. Local authorities, some of them want us to show the social values we bring as part of our contract (any part of business). It is at the bidding stage.
W2 (Communications Manager)	The whole ethos of the contract is to recycle as much as possible and then divert the remainder from landfill. Our targets are set and monitored around this principle.	For us meaning of re-use is same as given by the government; where something is used again for the same purpose. If there is a government legislation to promote re-use then it can enforce organisations towards re-use behaviour because we will always follow the mandatory requirements.	The Local authority state 'their aim is zero waste'. Promoting and communication re-use has been at the forefront of our strategy for a number of years - this has been instigated by contractual terms in that the GMWDA were clear that re-use was a key part of our contract solution.

M1 (Environment Specialist)	Zero waste to landfill is embedded in our policies.	In terms of re-use it is waste that is used again, we do not try to take good materials and then re-use it. So for us we will take the waste that is processed as re-use and send to somebody else to re-use it for something else. We introduced the Back to the floor scheme in 2012, where they take -back their own flooring off-cuts to reprocess and remanufacture. The unsold stock, because it would have a commercial value so it would go to a process whereby it would be sold in less price. Over time if we need to clear our space because it is becoming uneconomic to store it, we have 2 choices one is either dispose it or if we have infrastructure to send to re-use for charity. At this point it becomes waste to the business and re-use to other. If there is a government legislation to promote re-use then I think it will grow. But it all depends on the type of material because the aged material that was used 10-15 years ago does not comply with the current legislations. So that is the problem since the materials used now in 20 years time might not comply with legislation as legislation moves on. There is discontinued problem of what we actually do with aged materials. So it is difficult to know how re-use mandates can work.	In managing re-use they play no role at all.
M10 (National Account Manager)	Whilst zero waste to landfill is not currently embedded in our environmental policy we adopt a landfill avoidance ethos and all recyclable material is extracted prior to any material going to disposal.	The waste hierarchy of Reduce, Re-use, Re-cycle places a definite difference between the meaning of re-use and the meaning of recycle. My own opinion is that the re-use definition given by government should be expanded to include that the products or components (providing their physical composition does not alter) can also be used again for alternative purposes.	They are not at all critical.
T1 (Corporate Relationship Manager)	We have our own Environmental policy that covers the following areas: Climate change, Waste, Materials, Packaging, Wood and Forest Products, Energy, Transport and Travel, Conservation of Biodiversity and Water. We are committed as a minimum to complying with all applicable labour and environmental legal requirements in its operations and supply chains.	For us meaning of re-use is same as given by the government.	Our work with Local Authorities is limited to the disposal of stock deemed not fit for resale or re-use.
T5 (Managing Director)	We have zero waste to landfill embedded in our environmental policy.	For us meaning of re-use is same as given by the government. It is about preventing valuable resources from being wasted or “down cycled”.	Role of Local authorities is not critical at all - we work in the commercial waste stream.
T6 (CEO)	Essentially the zero waste to landfill is embedded within our organisations since we are re-use organisation. We are at the end point rather than the producer of the waste.	For us meaning of re-use is same as given by the government. Though we consider any form of re-use if it is in the same format and is not been reprocessed even if it is used for a different purpose that is just as good. There is only one way that government can increase re-use by raising landfill tax. Further recycling and recovery is costly and also there should be carbon tax in incineration, because burning incurs extra cost to the environment. Any way government influences anything is through tax so if tax is placed for recycling and recovery it can influence behaviour change towards re-use.	In our case they are very critical since they gave us the start-up funding. They are the monitoring bodies.
T7 (Sustainable Business Manager)	We absolutely follow the waste hierarchy, we maximise re-use. The zero waste to landfill is not explicitly implemented in our policy it is implicitly embedded. It is in our sustainability reports.	I think people can re-use waste. I think something has become a waste and you apply the re-use technique and it comes out of being waste. The point where material becomes unwanted can be re-used and once you re-use it is no more waste. There is a need to have greater clarity to industry about re-use. So, as much as government need to refine the definition they need more time to engage to make re-use understand within the industry. Even in the waste industry and experts in the industry there is a huge lack of understanding about re-use the term re-use is misunderstood with re-process. If there is a government legislation to promote re-use it needs to be done my identifying more materials that can be re-used. To certain extent it will be a good idea	They are the clients. Absolutely to deal in terms of household waste but not commercial waste. They are unaware of the complexity if waste.

		but knowing the waste industry it might lead to reverse behaviour. The other way to enforce re-use is by putting the waste (recycling and recovery) cost up.	
T8 (CEO/Project Lead/ Environment Manager)	T8 is incubating 4 projects under the banner of the Green Hub, namely The Global Garden; Wood Works Wonders, the Community Energy Lab and Green Wheels. These projects promote recycling, waste reduction, energy efficiency, composting, and provide skill and opportunities under the leadership of local communities, volunteers, and entrepreneurs.	Re-use is not limited to the definition given by government. Retrofitting capacity and intentions are also amplified for re-use materials.	They are the initiator. Haringey is a leader in 'green' strategies, to promote the Green Deal.
T9 (Business Manager)	Although The Society has a comprehensive environment policy, the recent waste directive and zero waste to landfill is not currently embedded within it - this policy is reviewed annually in July of each year, and I would expect it to then be included. T9 has had a "zero to landfill" policy in its ethos for the last 3 years, with the encouragement of R2. All equipment that comes to us is either refurbished and sold for re-use, for which we have an Exemption to our Environment Agency's waste processors licence or it is dismantled, segregated and sold within the same Agency's Hierarchy of Waste, for the reclamation of various types and grades of metal and plastics.	In essence we share the government definition but we define it as - the physical refurbishment and sanitisation (from a data erasure viewpoint), of a pre-used item that is considered disposable by an individual or company, but is fully capable of further use in the same capacity as they were originally produced and sold.	We are really pleased that sections of the local authorities in Southampton and Hampshire are regular donors of redundant IT equipment. They supply fairly large amounts of good quality, well looked after equipment from schools and offices that yield a higher than average re-use percentage. Going forward we are looking to become more involved in taking IT "waste" from Local Authority waste sites, but it is proving very difficult to achieve this because most sites are operated by other much larger generic waste handlers - hopefully the current tightening of landfill regulation will encourage them to seek partnerships with specialist operations such as us. We would expect that the LA's will seek to enforce this more when they let their waste site operations contracts.
T10 (Managing Director)	The zero waste to landfill policy is 100% embedded because our organisation works to promote re-use.	Our definition of re-use does not match with the definition given by government. We use materials for up-cycling where the materials can be re-used for different purposes. That still stops the product for going to landfill or waste by reusing it in a slightly different purpose. Therefore, definition needs to be refined. However, there is already too much legislation so I am not keen on government putting further legislation for re-use to enforce it. Government should charge effectively with the throwing away re-usable items by involving with big players. For products like mattresses government should make it illegal to throw it away to landfill or put charges over it. It will lead to a industries looking for alternatives leading to change in behaviour. So rather than making re-use a mandate government should start panelising for waste (recycling, recovery, and landfill) to promote re-use.	Theoretically they are the core of re-use in London. Local authorities are absolutely fundamental to promote re-use. They are one of the 3 corner stone's of our engagement strategy. Financially they are almost about 1/6th of our turn over. However, theory is one thing getting them engaged in work is a different matter.
T11 (Operations manager)	Re-use is core and business of our organisation and is fully embedded within our staff.	Our definition of re-use does not match with the definition given by government. We use materials for up-cycling where the materials can be re-used for different purposes. That still stops the product for going to landfill or waste by reusing it in a slightly different purpose.	We are very strong in lobbying and giving advice to Local Authorities (LAs) for engagement towards better waste management.

Table 9.6: High Attractiveness (coding)

Organisations (Interviewees designation)	**Feedback**	**Comparative analysis**

Questions	*The research shows that change in an organisation takes place at any or every level. For you, can you give me an example of you being one of the leaders in re-use, so how the re-use policy or strategy is coming to being in your organisation?*	*Do you carry out any form of comparative analysis with competitors in terms of re-use?*
R0 (Group Manager Waste and Water Resource)	Runs a partnered retail organisation; introduced the first partnership combined report (sustainability/annual) in the year 2009. Re-use initiative started in 2012, parts of the driving force towards re-use are our customers. Currently, people want to know whether product is sustainable or not such as FSC certified etc. Then other driving force is competition. One of the best examples is R4 introducing their sustainability plan and have improved a lot. We have good quality products that are also one of the driving forces by increasing its life. At R0 we are driven towards doing the right thing and consumers are big motivator for living up to our expectations.	All retailers sell same products and all generate similar prices. Yet the level of cooperation, coordination is not there. Rather than trying to save the world individually let's do it as a group. Although I would love that to happen but most are driven by wanting to be first. Sometimes that can be healthy but I am not fussy for the headlines. At R0 the total waste was around 82000T last year all over the UK (340 supermarket shops and 40 retail shops. Out of it only 3.9% went to landfill.
R1 (Senior Director for Sustainable Business)	In 2009, we moved our clothing brand into a purpose-built new office and during the build process ensured sustainability was high on the agenda as the building was installed. Re-use at our organisations started when T4 the TSO approached us in 2011. Because what we use to do was to return the unsold food stock or surplus to the manufacturers. So T4 asked for our support and we were fine with that since the unsold food stock is distributed by the T4 to charities.	We do not compare our waste or re-use performance with our competitors we actually compare it with our internal targets. However, since our reports are public so it can be seems that there is not a massive difference in the targets from any other retailers. We diverted 96.5% of our waste away from landfill.
R2 (Sustainability Specialist)	Launched an effective delivery plan in 2008 as a new sustainable initiative towards reduction in cost and carbon emissions Re-use initially started through request from local stores (staff survey)in 2011 which led to top-down implementation. Donations are organised centrally following requests from stores.	We do not compare our waste or re-use performance with our competitors. 72% of waste recycled or composted and 11% was sent to landfill.
R3 (Store Sustainability Lead)	Re-use initiative was top-down approach from head office in 2012. However, it is not uniform at our organisation all over the world. Some countries have it (like UK) but some do not. UK is 1st to start this. It is mandate to follow the furniture take back service in R3. However, implementation was at local staff level. It was left with staff to negotiate with the supply chain in reference with Duty of Care. After some pilot projects policies and procedures were formulated to be followed by all to carry out re-use activities.	We do not compare our waste or re-use performance with our competitors at this moment; we actually compare it with our internal targets. Almost everything that is integrity of the sustainability, success of the business, recycling and so on.
R4 (Head of Sustainable Business)	Introduced a new sustainability strategy in 2007, which started getting implemented in late 2009 The inspiration behind re-use initiative was the company goal that was set out to be zero waste to landfill which was simple and easy to understand. There were lots of details behind what the materials will be re-used for. For most people through engagement it was made aware that nothing goes to landfill. It was time-consuming working with our internal team, our waste providers, logistic providers lead to work up ways by getting maximum value from the waste. It was a top-down approach and started in 2011. We also carried out customer survey to understand their behaviour towards re-use of clothing by donating it to charity. We found out that lots of people do like to give but lots of people do not especially those who enjoys fashion and it is a social activity, for them their cloths are pride and since it cost them descent amount they do not want to give that away free of cost.	Because of our nature of the business we have lot of waste according to most standard business but tiny amount compared to our competitors such as big supermarkets. Each organisation has found its own solution. We are not really worried about our competitors since most of them have different scheme and operation. None of our unsold stock or materials goes to landfill.
C1 (Head of Sustainability)	Re-use started as a middle approach in 2010; basically it came from the sustainability team. It was identified in one of our project where sustainability team saw lots of potential materials on site that was discarded as waste. So sustainability department discovered the TSO with whom we first started our re-use activity for social benefit. Us trying to drive the projects team to find ways that they can save money improve their waste performance and benefit the local community at the same time. That was added in by the top to deliver the money to the bottom line.	We recently launched our 20X20 vision for which we did a lot of comparative research with the others in the industry, for setting out our values and aspirations and the targets that we want to achieve. This year we will be setting baseline of our own performance and we will set targets based on our own performance. We will be signing up with WRAP resource efficiency so that will provide the comparison with other organisations who sign up. We keep an eye on our competitors now and then but not necessarily consistently
C5 (Sustainability Manager)	Our sustainability staffs are ones with University specialisation in sustainability. So, the passion of sustainability staff towards re-use was one of the driving factors in our business since it was not just a sustainability savings but financially savings as well so it turned out to be a business case. It was a top-down approach and sustainability team are constantly asked about the savings.Started in 2010.	We look at our competitors' strategies and their performance. But in comparison to others we are probably ahead of the curve and it is evident through our team. We also show year on year improvements in our report.
W1 (Head of CSR)	The re-use initiative was not a top-down; it was a customer requirement to provide social value through re-use in 2012. It is in the individual project basis when tender comes out customers (Local Authorities) asks for it. Also, when CR programme started re-use was identified as one of the ways by which we could preserve resources. This initiative came from CR team.	We do not carry any form of comparative analysis in the terms of re-use or social enterprise. Our marketing performs comparative analysis in the terms of business strategy, circular economy, and resource efficiency. It is more from a competitor point of view what we can offer that they cannot.

W2 (Communications Manager)	High-level policy when setting the contact set out that the principles of reduce, re-use and then recycle should be followed, we therefore implemented a number of re-use elements to our contract and communications work. So it was a top-down approach started in 2012.	We do not carry out any form of comparative analysis with competitors. From a contract perspective we carry out Local Authority reviews on what is best practice and being delivered elsewhere.
M1 (Environment Specialist)	The re-use initiative started at the middle source of level within the people who were dealing with it in 2011. But when they shared what they liked to do then they received the support from the senior management team.	We do not carry out any form of comparative analysis with competitors. Because all businesses are different and it will be a complete waste of time.
M10 (National Account Manager)	It is in the company policy that resource security is achieved through utilising 100% of the feedstock (recovered fibre) as a necessary part of sustaining the production of paper. It stated as a top-down approach in 2011.	We do not carry out any form of comparative analysis with competitors.
T1 (Corporate Relationship Manager)	It is the top-down approach and one of the best examples is Shwopping whereby 10.5 million garments have been re-used through this scheme since 2012.	We are a member of SCAP and have regular conversations with competitors and like-minded associations about this subject.
T5 (Managing Director)	The re-use initiative was a top-down approach started in 2010, since it made financially sense to re-use rather than sending it to recycling, recovery, or landfill.	We do not carry out any form of comparative analysis with competitors. Because none of our competitors re-use the material like we do. They just recycle it.
T6 (CEO)	Re-use initiative started when I was acting in capacity with T10 and proposing project that was differentiated to what I saw existed. It was then in 2011 that I found the space and told Local Authorities about it for funding and received funding from the Local Authority to instigate re-use as a social enterprise activity. It was a bottom-up approach.	We do not carry out any form of comparative analysis with competitors. Because we build the model by differentiating from the competitors So the legal structure, the customer group that we serve are different and we also have social value attached to our work. So we are different from them fundamentally.
T7 (Sustainable Business Manager)	The re-use came into being through the individual having a concept and an idea and saying the clients that it was the right thing to do, so more of a leadership and top-down approach in 2012.	We do not carry out any form of comparative analysis with competitors. Because our competitors' business model is so different and waste is only part of it. Waste is not priority by any means. But we do compare how our partners are doing with the industry.
T8 (CEO/Project Lead/Environment Manager)	Re-use initiative is definitely the top-down approach in 2012. Inspiration had been to transform re-use as a social enterprise activity at T8. The ongoing re-use projects leads to social, economic and environmental benefit to community, businesses involved and T8 making it win-win-win initiative.	At T8 we do not carry out any comparative analysis with competitors but so keep an eye on them to learn and facilitate activities to make re-use a social enterprise.
T9 (Business Manager)	On behalf of The Society in general and T9 in particular, I belong to the largest business networking organisation in the world (BNI) and am constantly evangelising the need and effectiveness of re-use - and more specifically the benefits to the disadvantaged in getting their lives back on track in participating in our work, people who could never afford PC World prices being able to purchase low-cost technology, and the benefits to the environment. I firmly believe that re-use is embedded within The Society's ethos and generally issues from mid and higher-management levels, which then is incorporated into normal practice.	We do not carry out any form of comparative analysis with competitors.
T10 (Managing Director)	The T10 initiation was a bottom-up approach in 2010 by receiving initial £5 million funding from the government. T10 is a highly inspired charity from the LCRN. LCRN was very strong in lobbying with Local Authorities for asking them to engage in re-use activities with charities and communities. So, one of the Local Authorities challenged LCRN to pull themselves together and provide a proposal to initiate re-use. So, it took almost 18 months to come up with the paper, theory, and methodology which then presented LCRN goal which received £5m of funding to start the T10.	The competitors such as British Heart Foundation (BHF) have captured the high street awareness of furniture re-use. The issue with them is they are very selective of the re-usable materials they want and collect. But we are different since we take all of the products as one protocol and we re-use what we can and recycle the remaining. So what BHF will handle is something that is only profitable to handle, but what we do is we incur cost of recycling and we provide development opportunities to people (training, volunteering etc.)
T11 (Operations manager)	Bottom-up approach. It was 26 years ago when we evolved from LCRN. It was group of enthusiastic people and charities who came together to connect organisations and community that wanted to do better with waste. Since then members meet and share the ideas to promote quality and marginalize in society.	We consider recycling and recovery waste service sector as our competitiors.

Table 9.7: High Credibility (coding)

Organisations (Interviewees designation)	**Achievements**	**Guidelines**	**Innovations**

Questions	*In your sustainability report, you have provided a substantial amount of achievement in regards to waste recycling, recovery and some on re-use. How do you measure achievement?*		
R0 (Group Manager Waste and Water Resource)	We measure all the different kinds of waste the cardboard packaging and the mixed waste that cannot be recycled. Mostly because over half of the waste is cardboard. We currently have about 10% re-use rate the other 90% we all it end-of-life. Only around 1-2% remains as unsold stock.	One of the guidelines of this year is to send no more than 2% waste to landfill. Further, always find the ways to reduce waste and keep moving up the waste hierarchy from recycling to re-use to reduce and prevention to eliminate waste at the first place. For unsold stock the first priority is to reduce the price so that someone buys it and the second thing is giving away to charities or social enterprise.	In online click and collect it says that by the way this box is made of our own transit packaging. As a pilot, collaborating with Bio-Bean to produce a recycled coffee brand.
R1 (Senior Director for Sustainable Business)	We have 2 reporting system one is the UK Industry reporting and other is provided by the Global responsibility report. To date, we've already replaced all the wire ties used to hold toys in place, reducing the amount of wire waste that ends up in landfill by an estimated 80 tonnes every year. 96% of construction waste being diverted through re-use and recycling. None of our stores send food to landfill. Packaging is an essential part of many products, but we've been working hard to reduce the amount we use and have seen packaging weight fall by 27% since 2007. In 2012 T4 (TSO) redistributed enough food for over 8.6 million meals. The food that we send will result in another 3.75 million meals by the end of 2013.	The unsold food stock goes to our distribution depots and from there it goes to T4 (TSO). None of the waste from store goes to charity it is only through depots. According to the guidelines the achievements are reported internally in quarterly basis and externally in annual basis. In the terms of construction or refurbishment waste we are tied up with the big waste organisations since all of that is considered as general waste.	Not applicable
R2 (Sustainability Specialist)	We don't have a number for re-use. The re-use targets are mentioned in the form of case studies.	The only guideline in waste management that we follow is reducing waste to landfill. We have introduced a new data collection partner for collecting robust packaging data.	We are working with the Ellen MacArthur Foundation and have undertaken a trial with Globe chain.
R3 (Store Sustainability Lead)	We have recovering index to measure reduce and re-use it is items sold in bargain corner (re-use) vs all the materials coming to recovery. Another is the recycling index it is the items sorted for recycling streams vs general waste this index provides the energy recovery, recycling and landfill together. We are under process to develop performance indicator to measure re-use that goes to charity. In a year around 15-20% remains unsold of which less than 1% goes to landfill. Share of waste from stores and other R3 operations sorted for recycling is increased by 1% since last year, it is 89%.	According to the guidelines it is required to have no less than 90% recycling rate. We have 35 separate waste recycling streams in which items are segregated and send to recycling. The recycling contract is centralised. In terms of re-use we make sure that we cannot resale the take back items they have to go to charities. We can only resale the unsold stock.	We have introduced a bargain corner where the unsold stock is sold to avoid recycling or land filling. First it starts from 30% reduction and goes to 75%-80% reduction.
R4 (Head of Sustainable Business)	We capture the economic value of unsold stock as a part of giving it to charity that is reported every year. To measure the re-use, recycling and recovery we do not use GRI rather keep it very simple. We know the volume given to charities and the economic value and the remaining either goes to recycling or recovery. But we do not provide specifics. Most of the unsold stock goes for re-use.	'Love your cloths' introduced by WRAP is part of our action plan and all staff is aware of it. The mechanism of warn again and warn again overseas or refurbished/refashioned/up-cycle if damaged. Even the construction/refurbishment waste is part of our policy and guidelines. So first thing in guidelines to contractors it is clearly specified to use recycled or re-used materials for any construction and refurbishments. Last year we also added in our guidelines to re-use fittings and fixtures. All these specifications are very well defined in the guidelines and quality checks provided to the contractors.	As part of pilot project we a collaborating with Neighbourly who are connected with charities and shops that have food waste to find the distribution model that works to avoid food waste. Another organisation we are involved with is Company shop who takes all the food products that are not sold into their shops and sell it to customers. We are helping them to build the network all over the UK. We make sure that the fashion items are made with an intention of not lasting long so that they can be stripped down and re-used as material. We are thinking about design that fit the assembly. Another pilot is with the University of Cambridge to develop a model for re-use of clothing to understand the commercial and customer behaviour. Our priority is looking for the options that can prevent re-use by increasing the longevity of product at design level. But in terms of re-use we are looking at rental subscriptions schemes.

C1 (Head of Sustainability)	The achievements are measured by using SMART BRE assessment tool and ACCESS and not GRI. Only 1-2% of the waste generated goes to re-use, but that varies year on year depending on the type of projects. The carbon emissions in 2013 as compared to 2010 have gone down by 35%.	Sustainability team role is to advice our team in legal compliance to make sure all the plans and procedures are in place. We also deal with environmental assessment methods like BREEAM, LEED, SCAR. We also deal with community engagement and wanting to help community through charity re-use. We have a system and procedure in place to measure the waste achievements. We have environmental reporting on monthly basis that includes recycling and landfill figures provided from our suppliers for each project. For re-use we have a separate recording system where we record based on the waste transfer notes. This system is a guideline that needs to be followed by internal and external bodies. Same guidelines apply for any construction/refurbishment on our offices. We never donate something for re-use that can cause harm or incorrectly used by organisations.	Our unique selling point to clients is that the best practice is part of our service. This year we have not conducted any pilot we are about to in terms of re-use as we conducted during Olympics.
C5 (Sustainability Manager)	The achievements are measured by using SMART BRE assessment tool and not GRI. In one of our recent projects we managed to divert 10.8T of waste from landfill to re-use.	All waste reporting is monthly reporting and is based on SMART BRE assessment.	Before re-use step one for us is designing out waste. For all of our sites we have introduced a shwop shop. It is an online port where each site provides information on the materials left at the site. Those sites that need any of the materials will get the notification and can go and pick it up. It is all over the UK and each site pay themselves for the logistics. The remaining materials go to our warehouse for future re-use.
W1 (Head of CSR)	We use to but no more report in GRI, we find it more of a tick box exercise. Sustainability is so much embedded in our strategy that we measure based on business strategic and not GRI. The re-use is measured based on both the economic value and volume re-used but is measured at the local-level. It is not round up into corporate national number. There is no standardised system to measure re-use. The circular economy accounts for 10% of our revenue and it is set to grow.	We have our annual sustainability report which is going to become more of a business strategic report. Also for construction or refurbishment projects for offices we do look into the materials used in addition to energy efficiency.	One of the pilots in terms of re-use is with Blue Sky. They are social enterprise who employs ex-offenders for work force, so we are using them at the local contract level in London and we will be mapping nationally who we recruit to take it at national-level.
W2 (Communications Manager)	We measure via tonnage diverted from landfill. We continue to increase our recycling capacity through investment in new facilities and acquisitions, and now recycle around 2.4 million tonnes of material a year.	As guidelines we have an environmental education centre which welcomed nearly 14,000 visitors from schools, colleges, and community groups last year.	One of the projects is where the 200,000 tonnes materials recovery, anaerobic digestion and gasification centre, opening in 2016, aims not only to transform green bin residual waste, but make a real impact through employment and training, education and awareness, and opportunities for small business and social enterprise.
M1 (Environment Specialist)	We measure our achievements based on GRI reporting index which is published in our sustainability report. In 2013, the total amount of material that was sent to landfill sites decreased compared to 2012 and 8% more waste material was recycled. We produced total of 22,058T product waste and 56% of which was re-used. Overall in 2013 we re-used and recycled 87% of product waste.	Our internal measures are that if the waste stays in the same facility where it is produced is classified as re-use. If the waste is transferred to another unit they use it as raw material then we classify it as recycled. If it goes external to third party then it is classified as recycled. So through this procedure we have complete overview of where the material is going to.	Not applicable
M10 (National Account Manager)	We measure input tonnages against output tonnages and are able to determine % recycling back into product used.	We secure profitable growth while having a positive impact on our environment through following ways: By minimising product waste through our packaging solutions; by optimising resource use / re-use through recycling solutions. All paper packaging which we provide to our customers is already 100% recyclable. Eventually, we will take all avoidable waste out of	We have always been aware of the importance of taking a 'cradle to cradle' approach to our business, from sourcing raw materials through to post-consumer waste. As a result, we have integrated sustainability into our operations by developing our own recycling capabilities and managing over 100,000 hectares of

		our production system and we will minimise our waste to landfill to those materials that are not further recyclable and/or recoverable.	sustainable forests. One of the examples is we are right on track with R4 and R0 by remanufacturing cardboard boxes from the cardboard waste generated by them.
T1 (Corporate Relationship Manager)	We use our own measuring tool. 10.5 million Garments have been re-used through Swapping scheme since April 2012 (to March 2015).	We have a robust system for dealing with unsold stock. We have a logistics network that collects unsold clothing from shops, this is then collated at either our Northern Logistics Centre (Wastesaver) or our Southern Logistics Centre (Milton Point). Items are sorted for either redistribution to other Shops, Festivals or Online Shop for further opportunity to resell.	Our unique recycling plant, Wastesaver, maximises revenue from textiles that cannot be resold in our shops, and minimises the amount of textiles sent to landfill. Damaged or low grade items can be sold to recycling traders so they can, for instance, be turned into car soundproofing or mattress stuffing.
T5 (Managing Director)	We measure it in tonnes and as a % of the total tonnage we collect. In 2013 we succeeded in reusing 2,720 tonnes of waste wood.	Our aim and our member enterprises aims is to save resources by rescuing and re-using waste timber that would otherwise be land filled (or at very best down-cycled into woodchip). Create sustainable jobs, as well as training and volunteering opportunities, for local people - especially those who might find it difficult to get into or back to employment.	Not applicable
T6 (CEO)	At the moment we measure the rough tonnage of re-use based on volumes and Luton van, very basic. We are still in early stages so we have not invested in any impact measurement tool. We do have a reporting system that is presented to the council which provides achievements such as jobs created, training programmes, community events etc.	We are social enterprise who does both re-use and produce quality items from re-used materials.	The uniqueness about our business model is it is high-value up-cycling. This place is about high-margin low value transactions. It means high profit through fewer sales. High-margin is the different customer to low-margin.
T7 (Sustainable Business Manager)	We do measure the performance of our partners and it is not based on GRI reporting.	The way we work is designed to deliver impact in everything we do with our partners. Our best creative strategies and projects involve working with our local partners to make things happen and show what can be practically achieved, just as we did with BedZED. We do this through the practical implementation of projects, using and applying our unique framework. We scale up our impact by influencing policy and practice. We are always seeking to improve, so we measure, research and evaluate and, if necessary, adapt or amend our approach.	We want to make a real difference, inspire others to do the same and work with our partners to make innovative and lasting changes happen. We apply creative thinking to challenges that need a fresh perspective or where an entirely new approach is required.
T8 (CEO/Project Lead/ Environment Manager)	We have our own system of measuring and monitoring the achievements. We do not use GRI. We measure in monthly basis. Recent figures are: Collected 10 cubic meters of Rockwool insulation from the Olympic Park, half of which has been re-used locally. Generated income of £5,153 from re-use.	Since 2014, T8 has been committed to communicate the re-use initiatives and its benefits among staff through training and to supply chain through marketing.	Building on a long standing tradition of re-using construction materials, a dedicated project has been established at which donated materials are donated or received and are either re-used or sold on.
T9 (Business Manager)	We provide figures to Environment Agency which splits re-use (i.e. the product refurbished and resold) against the product that is broken down for recycling in both the hazardous and non-hazardous waste categories. I guess it goes into the GRI from there. We also keep our own records of donated product re-use versus recycle.	As a registered waste processor with the Environment Agency we report every quarter into their system.	Not applicable
T10 (Managing Director)	We use measure my body where they have a database to calculate and measure re-use, recycling. They capture all the details. Along with that we also provides achievements such as jobs created, training programmes, community events etc. The formation of T10 was in 2010 a Local Authority in London challenged London Community Resource Network (LCRN) to initiate re-use, which took them 18 months to present the aims, objectives, methods and goals to establish re-use. London Waste and Recycling	We have established and coordinate the T10 which comprises like-minded charities and social enterprises operating in and committed to growing the re-use market. Collectively, we have increased the market and demand for re-used items in London and have created many jobs, training and volunteering opportunities. Our mission is to divert re-usable items from landfill and incineration by creating collaborative and effective solutions with the public, private, and social sectors.	Housing communities have 100s of void clearance properties in a year time. We are initiating our partnership with these communities to provide them network of furniture re-use depots that they can partner with to use those spaces for rental purposes. One other project that we are trying to establish is the mattress deconstruction to avoid the mattresses going to landfill. To save our carbon footprints we try to keep things local.

	Board (LWaRB) gave £5 million of funding to start the T10.		
T11 (Operations manager)	We have approved re-use centres which are also ISO audited and checked in regular basis.	In current market recycling is pushed before re-use despite re-use being the priority in waste hierarchy. Our aim is to make re-use a social action in future. Although being networks of social enterprise our aim is to provide best services in compliance with legislations.	Today we are proud to say that we are neck to neck with the waste organisations in managing re-use with excellent infrastructure, logistics, and services. Also, we are ahead of the waste in terms of providing social benefit. To achieve that we are professionalized as any other corporate. Also, we are ahead of the waste in terms of providing social benefit.

Table 9.8: Engagement/action (coding)

Organisations (Interviewees designation)	**Economic benefits**	**Non-economic benefits**
Questions	*The inspiration behind re-use initiatives and collaboration with TSOs?* *How optimum is the collaboration with TSOs? Do you consider it a long-term partnership?*	
R0 (Group Manager Waste and Water Resource)	We absolutely receive rebate from our partner (M10) who take our cardboards which comprise of more than 50% waste and remanufacture them and sell back to us. Letsrecycle.com publish the values of all the recycle materials and when we do the contract with M10 or any such organisations part of our contract says you will pay us based on the letsrecycle.com average rates. We keep it all separate for recycle of cardboard they give us a rebate value per ton and when they remake cardboard boxes out of our waste cardboards we buy on the commercial value. With unsold stock first is sold in the UK market and the remaining goes to overseas, none of the unsold stock is touched as waste.	With one of our partners called Environment con takes re-usable electrical and electronics materials from us. They have engineers and they repair what they can and make that sold in the local secondary market and the local authorities with homeless. Around 10% materials are finding second life through this. The partnership with T11 is ongoing. One of our partners called Anglo recycling remanufacture carpets off-cuts into under lays that we sell at R0.
R1 (Senior Director for Sustainable Business)	In terms of forecast the partnership with T4 is in a bit if dilemma. Since, through our supply chain we have been trying to reduce the amount of surplus which will reduce the amount of food going to T4. On one hand, we will have economic benefit but it will lead to reduction in social benefit.	The partnership with T4 is in a bit if dilemma..
R2 (Sustainability Specialist)	Our partnership with T7 is long-term and re-use will be an ongoing activity since it is usually cheaper than recycling. New bailing machines have been acquired and staff will continue to work closely with the waste services provider to ensure opportunities to reduce waste and increase recycling are maximised. Our waste manager is starting to see the results of her engagement with internal stakeholders on the opportunity to eliminate waste. Whereas previously large quantities of waste generated through range review activities was sent to landfill, this is now recycled.	Long-term and successful. T7 are now also doing more with our parent company, on delivery of the Net Positive programme. The charity is involved in each of the goals. What stores are left with may be donate-able through waste donation.
R3 (Store Sustainability Lead)	We offer furniture take back service to our customers when they want to buy the new furniture. For instance, for £20 we take back old sofa or matters for either re-use or recycling and that is done through the T11 affiliated charities. The items that are in re-usable conditions are re-used at the second-hand markets and those which are not we send it for reconstruction. Recovery team or bargain corner only deals with the damages staff in-store. It is separate from the take back service. In take back service the collection from store by charities is done once or twice a week and they by themselves do the re-use or recycle of the items. We do not touch those items. The items that remains unsold in our bargain corner are given to charities or schools for free of cost, of course they organise their own logistics.	The item that remains unsold in our bargain corner which we do not tend to waste is donated to the schools and charities we are partnered with. At least once a month we have charities or schools coming for re-usable materials. For instance, OASIS academy is a school we have regularly been donating textiles.
R4 (Head of Sustainable Business)	In clothing retail we have outlets of unsold stock where we resell our unsold stock as the first priority. If it is not sold there then it goes to charities. It is quite good because economic value follows that hierarchy so it is in businesses interest. Partnership with T1 will be long-term because it works but in we will look for other options for those customers who want money back by selling the re-use cloths. For charities it is important to think whether it is genuinely valuable for them to carry out the re-use activity because all they really want is the money to carry out social benefit.	Partnership with T1 is nice for the moment because it works for customers since they like to donate cloths to charity. In long-term we will keep T1 in the mix.

C1 (Head of Sustainability)	The re-use activity initiated with the idea of saving stuff going to landfill and also to save money since it takes lot of money in waste removal and management. Re-use is long-term because of the cost-benefit.	Donating the stuff is about adding social benefit. For instance, we donated re-usable materials to a charity called Growing Southwark and they created a small education centre in one of the local parks about bees. Our relationship with T8 although not structured but is definitely long-term.
C5 (Sustainability Manager)	The re-use activity has to have an economic value and carbon savings attached to it. In case of demolition projects we tend to have crusher on site so that instead of using virgin material for construction the crushed materials are re-used as aggregate. It decreases the diversion cost. The real driver for us is when we can save cost. We re-use when it save cost. All the furniture's bought for sites are from second-hand market where we saved around £100,000 and carbon savings by not buying fresh products. With T5 they are not cost-effective at the moment, they cosy us more in compare to chucking the wood in skip.	With T5 we are connected in re-use and recycle of wood coming out from construction site which leads to social benefits. But the partnership with them is not long-term since our priority is design it out waste.
W1 (Head of CSR)	The re-usable materials are dropped by residences to the HWRC which are managed by us from where it goes to TSOs. The re-use not necessarily has financially value for us.	Our partnership with the TSOs and social enterprises in terms of re-use is limited to the contract basis. The local authorities are our customers who ask us to provide some social value to the project which makes us partner with these organisations. It is not only the environmental value of re-use it is usually about providing jobs to disadvantaged. These kinds of social values are long-term if not with one charity then with another.
W2 (Communications Manager)	The Greater Manchester Waste Disposal Authority GMWDA signed a 25 year Private Finance Initiative recycling and waste management contract with us (Greater Manchester) Limited. This project provides a revolutionary integrated solution for the 1.1 million tonnes of municipal waste which the Authority handles each year. The GMWDA provides waste disposal services for 1,009,815 households in Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside and Trafford. We provide facilities and services to manage contract waste in an environmentally and economically sustainable manner. This will involve the reception, treatment and disposal of waste to increase levels of recycling, composting and recovery and reduce waste sent to landfill.	We work with our local authority and private sector customers to find a recycling solution that suits them. This includes either supporting collections that sort materials at source or providing a commingled, dry mixed recycling service. In some cases we also manage recycling operations on the customers' own sites. We provide trainings and apprenticeships to benefit at social level.
M1 (Environment Specialist)	Re-use activities lead to a realisation that it is quite good for business in terms of money, because if I cannot re-use it then I am paying somebody to dispose off that material. People get re-usable material free of charge and I save the disposal cost. So everybody is happy. In commercial terms the re-use of carpets can be financially beneficial to the charity shops. It is like in housing association where they tend to use the re-usable carpets to save the cost.	People get benefit by giving the material second life by re-use. Our unsold stock which if of no use is distributed to the local charities, schools or local communities so material does not get wasted it gets re-used.
M10 (National Account Manager)	We collect and recycle 32,000 tons of recovered fibre per annum from the R0. This material is recycled back into paper reels at our UK mills from where we distribute to our own corrugated plants and R0 encourages its internal and external customer database to purchase the recycled packaging from us creating a closed sustainable loop for their material.	The collaboration with R0 is optimum as far as reasonably practicable. There may be small volumes of their UK recovered fibre that it is not economically viable for us to capture although this remains organic in development and projects are currently ongoing to enable us to capture more. R0 is committed to recovering their fibre within the UK in the most sustainable manner. We view this relationship as a long-term genuine partnership. All key stakeholders continually strive to increase the 'closed loop' ethos of recovered fibre. I think one of the most unique things I have ever come across with R0 is their support of their suppliers and their approach to the relationship with them. They choose recycling partners carefully and I believe look for shared values in regard to environmental commitment, professionalism, and sustainable approach. Any project that will provide recycling industry and process longevity is supported as their view is a long-term one. Our objective is to contribute positively to the economic and social development of the communities in which we are privileged to operate by providing jobs and responding to the communities' social needs. We strive to be an integral part of the communities where we are located by supporting activities and community support programmes focussing on, for example, health and education.

T1 (Corporate Relationship Manager)	We make the most money from donated items through selling them in its shops or through its online shop. These channels allow us to maximise the value of the items. By keeping as much as possible to be sold in the UK, we raise the greatest amount possible from your donations to help our fight against poverty around the world. Other items may be sold into 2nd hand export markets, Frip Ethique being an example, or sold into recyclers who make use of the materials (industrial wipers, mattress stuffing, etc).	Donations that cannot be sold in the UK market for various reasons can be exported to markets in Europe, Africa, or Asia in line with our ethical supply policy.
T5 (Managing Director)	Our partnership with R2 is optimum; we provide a service for which they pay. Yes, it is hopefully a long-term partnership.	We want to help our partner R2 to re-use more of their waste.
T6 (CEO)	Through R0 green token scheme they gave us money and supported us as part of their initial partnership. Our membership with T11 is in marketing and branding and sometimes logistics. Our model works on providing the profitability to the businesses involved which includes essentially how much value is in the waste, what is the cost of getting it somewhere is the higher value and how high is that value when it arrives at that place.	R0 as part of partnership came to our training and they gave us work. R0 not only has positive corporate policy but also have a passionate team to make it happen. Hopefully, our partnership with R0 is long-term. T10 are excellent in streaming the waste items for re-use and they have provided us the materials in the same manner. We provide jobs, trainings, communities' events on re-use.
T7 (Sustainable Business Manager)	One of our partner R2 has 42 different waste streams and they manage to generate more income than disposing off the waste. Waste stream like cardboard, plastic and paper generate income. The re-use and recycling helps to reduce the huge amount of carbon and waste cost.	In the process of re-use and recycling partners manage to create lots of jobs. Our partners collaborate with us to achieve the means of one plant home. To benefit the communities and it is one of the long-term thing with our partners.
T8 (CEO/Project Lead/Environment Manager)	The re-use inspiration has been the financial and carbon benefit.	Transforming re-use into an organised social enterprise activity. The relationship with C1 is long-term but not structured. It is more informal. This year through our carbon reduction programmes (including re-use) activities we provided 11 work placements, offering office, building and architectural experience; 3 placements have moved successfully into paid employment.
T9 (Business Manager)	We generate a financial surplus - all of which is retained by the Society to further their work on behalf of the homeless and vulnerable members of our locality - many of whom are or have suffered the effects of drug, alcohol or other substance misuse or mental health issues. The re-use initiative with R2 started 5 years ago as a result of one of The Society's fundraisers talking with their Head Office are of course Southampton based) about what initiatives could be developed to support The Society. So beyond the normal sponsorship of events, we asked if we could arrange a day where we could collect their employees old IT equipment - this worked well and got the interest of their management who opened up discussions about donating their redundant IT as and when it came up for replacement. We enjoyed a good relationship with R2 but as the volumes of equipment increased IT Security Manager became involved and decreed that all hard drives had to be removed from machines being donated to us, which really reduces their value to us. They also have started using a large IT “cradle to grave” company for the supply, management and disposal of IT equipment so that their donations to T9 has decreased significantly over the past 12 months.	This relationship developed with R2 who became responsible for the supply and disposal of IT equipment. We offer opportunity for employment, work experience, repayment of community service sentences and volunteering to those who would not normally be considered as “useful” in the conventional capitalist business model. The arrangement with R2 is far from optimum but we are grateful for their support generally to The Society which continues.
T10 (Managing Director)	We coordinate and the TSOs and social enterprises who are members of T10 to give them opportunities where ever applicable. For instance, handling re-use materials at university which are left by students at the end of the year we collect all the materials from around 15-16 halls of residence. We then weigh, measure and report that back to universities. We then distribute the products to our partners in the network according to the specialised waste re-use streams.	With local authorities we can trade the expertise that they are looking for in regards to re-use. The two London Boroughs with whom we have long-term partnership are London Borough or Wand worth and Ealing. We provide training and development opportunities to people through re-use and recycling.
T11 (Operations manager)	Collaborating with the corporate is also a careful process we see their seriousness and motivation, the sustainability department, the CSR policies, their achievements criteria, the reason they want the collaboration and the impact in community.	The above achievements have lead to long-term partnerships with business sector; R3 and R0 being successful examples. R3 are the founders of take-back scheme. Collaboration with T11 helped corporate to handle the re-use materials and they started seeing it as an environmental benefit and providing support to community through re-use. R3 is pushing the social agenda to make sustainability a normative behaviour within their organisations. R0 is at the initial stage and we are collaborating with many other corporate to make re-use a norm for social profit.

Table 9.9: Behavioural maintenance (coding)

Organisations (Interviewees designation)	**Regular monitoring**	**Pre-assessment**
Questions	*Is re-use considered as a long-term practice within your organisation?* *What factors determine the level in which you interact with the TSO? Is there room to do more?*	*What do you look in an organisation to consider it as the potential re-use partner?*
R0 (Group Manager Waste and Water Resource)	The real problem that we found in re-use is for instance if we talk about sofa. The sofa comes back from the customers when they bought new one from us and T11 pick it up from us. They cannot sell it at all unless it has labels on it which shows it makeup requirement. That has been a real problem so we are working with manufacturers to put one more label underneath sofa since no one will peel the label from underneath. That's the same with carpet. So we need a uniform way of identifying what the makeup is. In terms of managing unsold stock, all of our buyers are good at what they do and part of their job is buying enough to support sellers without buying too much. In regards to construction and refurbishment waste earlier we tried to collaborate with charities to take away the re-use materials from refurbishment but we found time and logistics being the major constraints. But now we are exploring the local organisations such as T6 who are saying that they have solution to deal with the re-usable materials from construction and refurbishment. There is no one national organisation that does that. Localism for me is much more sustainable because you support local industry where you trade from. In regards to unsold food stock we have contract with T4 all over the UK but it is not working well. Since we do not have enough every day to give it to them may be because our shops are not as big as other supermarkets. So it does not work for us very well because their model only works for some shops.	We check whether the organisations we deal with comply with waste legislations and regulations such as WCL etc. To start with we talk to the organisation and they are chosen from T11 who is one organisation that has all partners who comply with legislation.
R1 (Senior Director for Sustainable Business)	Concept of circular economy including re-use needs to be clearer. I have 45000 different types of product in my store and applying circular economy to each of them would take a bit of time. So we are early days exploring rather than having it as a firm business practice. The collaboration with TSOs for re-use is something we will always look at it. For instance if someone comes to us and says we can do battery recycling and turn it to solar panels for off grid community. We are open to any kind of those ideas and we actually need to have more of that type of thinking. T4 have good infrastructure and logistics they do understand our model since they are national but local organisations do not necessarily understand our operations and system. Re-use of food items is tricky and in regards to items like TV it is in hand of manufacturers rather than retailers to look into how it can be re-used. None of our food waste goes to landfill from store all of it goes to anaerobic digestion and from depots it goes to re-use. The small amount of construction and refurbishment waste goes to landfill.	While choosing TSO we check the reputation. By that we need to make sure that they are responsible organisation in managing waste in the way they say they manage.
R2 (Sustainability Specialist)	Re-use is considered long-term as it is usually cheaper than recycling.	It is in order to deliver a clear re-use objective.
R3 (Store Sustainability Lead)	Unsold stock whose packaging is damaged and product is perfectly fine goes back to manufacturer with full cost refund and also those items which cannot be sold because of quality defects. Those which are damaged goes to recovery department which are built to sell in the bargain corner. So these items do not have warranty or guaranty on it but are cheaper than the full price items. Same happens to the display items. This way we re-use the damaged and displayed items by repairing and selling them at cheaper price to the customers instead of wasting it. If items are left over then they are sorted into 24 different recycling streams in order to promote recycling and energy recovery. The furniture take back scheme happens at least in a weekly basis. The ongoing partnership with charities and TSOs will possibly be now centralised rather than being managed at local-level as it is now. To maintain this behaviour any new staffs goes to a general induction process and sustainability induction is part of it. We share our requirements with the co-workers. We also have internal process to control general waste. The recovery department goes under training process for repair, re-use, and recycling the damage goods. In regards to our suppliers we measure in an unannounced basis at least once a year to check if they fall under our code of conduct. If any supplier does not fulfil the code of conduct the action plan is put in place and if they are unable to fulfil that in 3 months time the suppliers are out of business.	We always want to be a good neighbour to the local community. We support the causes outlined in our objectives which involves children, disadvantaged groups, disaster reliefs, women empowerment. Our assessment before partnering is looking to the causes to make sure it matches with ours, whether they are registered charity; also it is important that they have good logistics and operations.
R4 (Head of Sustainable Business)	One of the big challenges is that organisations are mostly looking to engage at the national-level therefore doing things at local-level becomes bit of a challenge. We could do collaborations if TSOs are at city level such as London or Manchester, otherwise we can do some pilots with them and think about the ways to make it national. The challenge with charities is we are always trying to reduce waste so at some point collaboration with them might become less attractive. Because we are working very hard internally to reduce the amount of stock we order then the charities are getting less volume coming through us. So probably volume will decrease when we get slicker and smarter and how we run our business. That could be a down side for TSO and it would be interesting dynamics for the industry in next few years. In some way TSOs may feel threatened by businesses since corporate might think to take over the re-use activities. However, for TSOs there is an opportunity if they try to do something at the city level rather than doing at national-level. But how much of informal re-use	We look into the best services and the most suitable location. We also look into the flexibility. Very good logistics network and key thing is speed. Have to have credentials. Operational abilities and motivations. We look for someone who are nationally based it becomes cost-effective as well.

	happen through sharing cannot be seen if enabled by digital technology would be interesting. To encourage the re-use and recycle behaviour among staff we are building a system to reward our technical team for their great effort. We also know the other options such as providing repair and refurbishment services, providing rental subscriptions so we are doing a 2 year pilot project to understand the customers' behaviour and how to deliver to make it valuable for the business. Further it is very important for us to have integrity of any product that is been re-used to keep our customers trust intact. So the quality credentials are verified either through testing or through standards. We are very transparent about where that material comes from, what it is capable to do. In some materials like cotton there are 2 challenges one is the quality which is never as good as virgin cotton and the other is cost which is always higher since it requires technical repair to make it quality for re-use as low price product. No one expects to use refurbished material at a higher price. So we have to work hard to make sure that supply base does not come up with the innovations that do not work with economics.	
C1 (Head of Sustainability)	Time and infrastructure are major constrains. For some projects we have to make decisions very quickly and in that type of project we could only think of re-use if we have time to stack things up in a proper manner and if someone wants to take it. The types of materials that we donate can be visibly checked if it's ok and with regards to things like ceilings we would involve our trade contractors in the re-instatement of those ceilings for the charities. Requiring enough time to chase the TSOs who can take the materials and in full quantity are the challenges. We need an organisation a middle organisation who could do further research to carry out research on re-use market so the gap between the construction and charity can be filled. So there needs to be ways to maximise that either through government funding or by corporate.	We do not discriminate. It is important to establish that they are registered charity. In terms of what that charity does and how they function amount their communities we do not do any research to find anything wrong with them. We meet them in an informal way to know about them. We do not want to go with those who have any political affiliations.
C5 (Sustainability Manager)	We are exploring our avenues for re-use. For instance, with plasterboard we are collaborating with a TSO who is lobbying with government to crush it and re-use it as cavity insulation. We are ahead of the curve but it is really early days it is been approved by EEA but it has to go through other quality checks. As a regular monitoring we are constantly been asked to provide the carbon and economic benefits out of re-use and recycling it happens in monthly basis. Logistics are very critical but it is all handled by the logistics contractors and not TSOs. But the main barrier is the cost of recycling and re-uses schemes. To make sure every trade contractors understand the concept or re-use and recycling we have tool box talks on site to cover that, we have environment management plans for every site.	Saving across the board is our main motto and that is what we look for in any organisation we collaborate with.
W1 (Head of CSR)	For us what makes us money is recycling and energy recovery so that forms the key part of our business, where as re-use there is not necessarily money in that. That is why we are working with social enterprises to give it and provide social value. The ongoing re-use projects is not something we are keen to look at if there are any issues that that is dealt at local-level. Any social enterprise we are dealt with are very good nationally established social enterprises. I imagine at the local-level they probably are not so good. Right now the re-use materials are of not huge quantity. With re-paint we are sending it back to manufacturers for re-manufacturing. The TSOs need to match what they do to what the business need so that will be saving in money and will add to social value. Location is important, it is about being pro-active in understanding corporate environmental and social objectives and align with it. Speak the language of corporate.	There are no audits. Our high risk suppliers are possibly manufacturers and they are assessed.
W2 (Communications Manager)	Re-use will be ongoing within the contractual perspective.	Joint aims, strategic thinking, able to deliver are the main things we look in TSOs.
M1 (Environment Specialist)	We as a manufacturers produce more than 50m sq.m. of flooring of different kinds every year. The re-use people I work with in the UK, if I go to them and say that we have around 50,000 sq.m. of flooring that is sorted and is required to be cleaned for re-use and I will pay gate fees for that as an alternative for recycling and incineration. They will save we cannot have that amount of material. The problem with this industry is to match up with our scale. They provide a service but the amount they handle is a fraction of the total. I do not think it is closed-loop system it is absolutely not. I would be pleasantly surprised if they handle as much as 1-2% all over the UK. The TSO cannot be threat to the recycling industry because they are very small they are technically not capable. The 1st questions are where they will store the material? The re-use will organically grow but the will never ever going to reach the level of recycling or recovery industry. Circular economy involving reverse logistics will go in long run saying that there will be a niche of people who will be doing re-use. We are heavily trying to move our way towards circular economy. Future that will be the way forward. They need to carry out the good work.	I make links with local groups.
M10 (National Account Manager)	Re-use to us can be a threat as well as opportunity in long run. In the majority we provide single-use transit packaging cases and would then collect the cardboard as recovered fibre and put it back into the recycling system so re-use isn't always an option for our clients and if it was it would obviously mean that we were supplying less, hence a threat, however the opportunities would arise in the area of new client potential as we can work on specific product design for particular applications and could adapt to design packaging for potential re-use in certain specific situations. As part of our sustainable sourcing we implement system of auditing based on the key sustainable sourcing principle; perform risk assessments of	Quality in relation to successful segregation at source and in relation to material presentation and paper mill compliance

	suppliers regarding food safety, technical data sheets, material safety, substances of high concern; and implement our key sustainable sourcing principles with our suppliers.	
T1 (Corporate Relationship Manager)	From retail side we maintain re-use. Here is the possibility of other partnerships outside of the clothing side of things that these two partnerships focus on.	We have to ensure that the ethical credentials of any company that we work with are sound before entering into any partnership.
T5 (Managing Director)	As a commitment to re-use we have partnerships with many commercial and non-commercial organisations such as C5.	We are all "singing off the same hymn sheet". The whole point of our organisation is to re-use waste wood. So it is embedded at every level and in every employee of our organisation.
T6 (CEO)	In future we are planning to have a proper measuring tool in place to measure the cost-benefit and carbon benefit ratio. It will be building on the social return on investment which is a key figure that government and investment organisations are interested in. Space and logistics are the primary challenges in the waste market. Our logistics and infrastructure to deal with corporate partners depends on the location. The expansion of this project is based on the franchises by setting up other projects like this in the other places. The equation that we work and will progress is: the value of waste vs the value of where it could be - cost of logistics/no. of people involved in that transaction.	We are all about re-use so the culture is embedded within staff and the supply chain we worked with their attitude towards re-use is been exceptional.
T7 (Sustainable Business Manager)	To continue re-use and other such sustainable practices we are working with other partners and looking into partnerships all the time. It is mainly retail, built environment industry and local government and policies. Huge savings, turning cost into income and reducing the volumes of waste are the major inspirational things.	It is a fundamental expression of how organisation is in managing the resources and thinking it a privilege in paying someone who is taking their waste is actually really valuable. It inspires the employee and the supply chain.
T8 (CEO/Project Lead/Environment Manager)	It has been since 2014 that re-use started getting embedded within T8 and its supply chain. The inspiration has been the financial and carbon benefit and transforming re-use into an organised social enterprise activity. Since 2014, T8 has been committed to communicate the re-use initiatives and its benefits among staff through training and to supply chain through marketing. There is definitely room to do more and collaborate with other construction, recycling, logistics, and insulation businesses. By any other TSOs who are willing to create partnerships with businesses for re-use activities. Businesses within logistics, construction, recycling, insulation, or any other domain are the focus to develop partnership with.	Localism and logistics are the crucial factors, since T8 has one site based in North London and we prefer our partners to deliver the re-use materials rather than throwing it away for recycling or landfill. Corporate who has ambition to move up the waste hierarchy and are committed towards social benefit are the ones we welcome to partner with.
T9 (Business Manager)	Our experience is that partnerships with corporate are great during the early days of a relationship - we have enjoyed several such relationships - but the pattern is always the same - as soon as we become a significant player the IT Security Manager gets involved, and being risk averse people, impose rules that restrict what their organization can donate to us. This is despite the fact that we use industry leading data erasure software that id both Ministry of Defence and NATO accredited. The standard mantra (excuse) is, that we are a charity and how could they sue a charity if anything (data leakage) went wrong. We have taken this on the chin and increased our business year on year by targeting donations from local authorities, SME's, the professions, and the public.	Trust us! we may be a Charity but we have never had a data leak, we are authorized and audited by the Environment Agency, we use robust processes and procedures, we use industry leading data erasure tools, we are in the process of getting accreditation to ISO27000 - Data Security.
T10 (Managing Director)	We started with lots of partners handling furniture, now it has gone to electronic, bikes, books, and brick and construction materials. So collaboration for us is the only way. Space is the big barrier since rental cost is the big factor it is about 40% of the total. So property cost is the biggest challenges.	We have started outside London being rental cost less but since we are T10 so our major focus is London.
T11 (Operations manager)	The biggest challenge with LAs is that they do not open up for re-use sites as for the landfill sites. They need to think laterally. They need to have a synergy all the way through the departments. They need to understand the social benefits attached such as volunteering, education, training to ex-offenders, long unemployed etc. We are lobbying to make it happen.	Challenge with corporate is to change the mind set. Since in most organisations people do not understand the difference between re-use and recycling. We are working on the challenge by communicating, educating and also providing toolkits to demonstrate the financial profitability of re-use.

Table 9.10: Avoidance of the value action gap (coding)

Organisations (Interviewees designation)	**Avoidance of the value action gap**
Questions	*Any message for Third Sector Organisations (TSOs) or corporations in general?* *Does diversity play any role towards re-use behaviour?*
R0 (Group Manager Waste and Water Resource)	Re-use is well developed; it is part of our whole waste strategy. We encourage our partners to recycle not re-use because what they got is operational waste. Re-use sets with some targets such as reusing washing machine by not breaking that done so their parts can actually be repaired. But we are not reusing a lot it is something we embraced and are working to improve it.
R1 (Senior Director for Sustainable Business)	The concept of circular economy including re-use is too new and is not well understood. So it is not embedded within staff and supply chain. It is talked at high level rather than what people see and how it operates. My message to TSOs are open to new ideas that could save money, nevertheless reputation and quality are key.
R2 (Sustainability Specialist)	In terms of re-use it is not well embedded since Time and logistics are usually the difficult issues. The TSOs need to match what they do with what the businesses' need, so that will be a financial saving and will also add to social value.
R3 (Store Sustainability Lead)	We would say recycling is embedded within the staff and we encourage suppliers to improve. We are also encouraging staff towards re-use behaviour. Reliability, not sending stuff to landfill, being responsible, trustworthiness: these factors are more motivating to businesses.
R4 (Head of Sustainable Business)	The re-use is embedded within staff since now it pretty much runs for itself. Most of the teams are relaying on re-use activates without policies coming down. Especially people who make the decision this behaviour is embedded they have built good partnership with the suppliers they deal with.
C1 (Head of Sustainability)	Re-use is not embedded as it should be. It is the same as you could say about sustainability. Certainly within the supply chain. They are so busy to get work done on time and they allow 10% waste in their jobs. We have people in different functions everybody is very busy so always try to think of the bigger picture. Sustainability team demonstrates that by showing the cost-benefit. Saving across the board is the main motto of corporations and that is what we look for in any organisation with whom they collaborate.
C5 (Sustainability Manager)	Re-use is second priority after design out waste. The behaviour is defiantly embedded within staff we have business school for trade contractors where the topic is covered. There is still lot of push back in the industry in the terms of segregation and re-use, they do not really understand it, it is not their immediate big concern. It all depends on who manages the waste. My message to TSOs is they need to look at the innovative ways since although we work hard towards achieving design out waste but then also there will be some opportunities for them.
W1 (Head of CSR)	Re-use is not embedded is not talked about unless local council ask about. Whereas, circular economy, recycling, recovery is very well embedded as it is the part of business strategy. It is embedded as far as it is not going to landfill within the staff it is just the business is where there is money. Reliability, not sending stuff to landfill, being responsible, do what they say are the more about these than the social values.
W2 (Communications Manager)	I am not sure if re-use is embedded within staff or supply chain. So more business acumen is something that TSOs need. Re-use could be seen as a long-term thing if business see any value either for business or for customer it would be very difficult to put the social value case over the business case. At the moment there is no reason to change. If in future a re-use opportunity comes that could save business money then the business case would be cost savings and social values vs the value of recycling, recovery or incineration it would be the balance.
M1 (Environment Specialist)	The concept of circular economy I do think is embedded in staff but not in our supply chain. Re-use organisations need to be on a bigger scale, because corporations tend to purchase everything at large scale and therefore, purchase at the lowest price wherever possible. So charities need to add enough value at the end. Understanding the motivation of profit and aligning their services accordingly is essential to be able to compete with the waste service sector. That should be the benchmark. TSOs need to do what they say, in the given time frame.
M10 (National Account Manager)	Recycling is an implicit part of our process and all staff and supply chain stakeholders are alert to the same. Quality will always be key.
T1 (Corporate Relationship Manager)	As far as I'm aware staff and supply chains are clear on re-use.
T5 (Managing Director)	Those who go the extra mile. Don't just settle for having your waste recycled, try to have it re-used.
T6 (CEO)	Corporate need to remember that cost is associated with the waste in this country, because you donate it you should not think that it should not be paid.
T7 (Sustainable Business Manager)	The re-use behaviour is embedded just in staff and not in the supply chain. Culturally it is still very rear it is still very small.
T8 (CEO/Project Lead/Environment Manager)	At present it is too early to identify any misperceptions. It all depends on the social, economic, and environmental benefits from re-use. We are still in process to see how sustainable re-use is for T8. TSOs may be charities, but we should be given the opportunity to demonstrate their potential, as we do have robust processes and procedures and they use industry leading data tools and have all the essential accreditations in place.
T9 (Business Manager)	I think that we have moved a considerable way from being a disposable minded nation, although there is still a long way to go! Firstly we developed into more philanthropy were there was a general misconception that re-use was a mechanism to offload older equipment / materials to the poor to help them in a charitable way to where we are now. There is a much wider appreciation that re-use is good, it benefits many areas and people and it should be encouraged from a multitude of standpoints. However this has not yet permeated the whole of our nation and much work needs to be done to drive re-use to become the norm rather than the exception. We want and do everything possible to be a growing solution to an ever-growing problem, and benefit the community and environment. We will do everything within

	reason to meet your requirements, we may be a Charity but we expect to be treated with usual commercial regard and terms - we don't hide behind our charitable status. We do and can always provide a professional and valuable low-cost service.
T10 (Managing Director)	Re-use is our core function that is what we do and make our livings so for us and our supply chain it is embedded. We want T10 to be seen as a viable 1st call organisation rather than 5th call organisation.
T11 (Operations manager)	Re-use is core and business of our organisation and is fully embedded within our staff. However, it is not embedded in our supply chain. It is relatively new and will take time to get it embedded. With a core re-use ethos and determination to provide social benefit, we do everything possible to be a growing solution to an ever-growing problem, and to benefit the community and the environment. They have the capacity to do everything within reason to meet the corporation's requirements.

9.4.1 Examples of interviewees suggesting a gap in the re-use regulatory measures

Among the retailers, R0 suggested:

> if there is government legislation to promote re-use, rather than recycling, it must start at the very beginning, with those who make the products (manufacturers). This is because they have to manufacture with a thought of how easy is it to repair, to upgrade and to replace damaged parts. Then, suddenly the whole industry of repairers would be reintroduced. That would be good for employment and industry – everyone will win.

R1 indicated:

> if there is government legislation to promote re-use, whether it will work or not will depend on how it is framed. When it was done for promoting recycling, by escalating the landfill tax, it emphasised organisations to look for investments to avoid landfill. It was more cost-effective to put the waste in recycling facilities, rather than sending the waste to landfill. I have not seen any consultation or draft that says there is any charge or levy on re-use. It is all just a concept at the moment, rather than developing a clear strategy, which can be physically implemented.

Among the construction sector, C1 suggested:

> re-use is something that needs to []come from a design perspective. To a certain extent, most organisations will start to do something if it becomes mandatory. Yes, the government needs to step in and say this needs to be done. However, it needs to be acknowledged that the government cannot enforce the re-use of particular materials or items. Since it will be difficult to check on the quality of re-use…introducing incentives rather than mandates for re-use is an option for the government.

In the waste service sector, W1 and W2 indicated that the government legislation on re-use could compel organisations towards re-use behaviour.

Among the TSOs, T6 indicated that 'there is only one way that government can increase re-use: by raising the landfill tax'. Along similar lines, T10 indicated:

> from my perspective, I am not a great believer of legislation. I think we already have too much legislation. The government should make policies and charge sectors in solving their problems. Charging the companies who produce white goods appliances some cost of disposal and getting fined [for the disposal] of mattresses can help to solve the problem. So instead of making re-use mandatory, as it could then encourage people to buy less reusable items, the solution is to penalise people for waste.

9.5 APPENDIX V

This section presents list all the conferences and publications carried out as part of this research.

9.5.1 Book of Proceedings in 2nd International Conference on Wastes, Braga, Portugal in Sep 2013

9.5.2 Book of Proceedings in 7th International Conference on Waste Management and the Environment, Ancona, Italy in May 2014

9.5.3 Presented at RGS-IBG Conference, London, UK in September 2014

9.5.4 Presented at IBEE Conference, Bath, UK in September 2015

9.5.5 Publication in Int. J. Comp. Meth. And Exp. Meas.

9.5.6 Publication in CIWM, UK in August 2017

9.5.7 Publication in CIWM, UK in February 2018

9.5.8 Publication in WaRM, ICE Publishing UK in February 2018

9.5.9 Publication in CIWM, UK in October 2018

9.5.10 Publication in WaRM, ICE Publishing UK in February 2019

9.5.11 Publication in CIWM, UK in March/April 2019

9.6APPENDIX VI

9.6.1 Research Summary

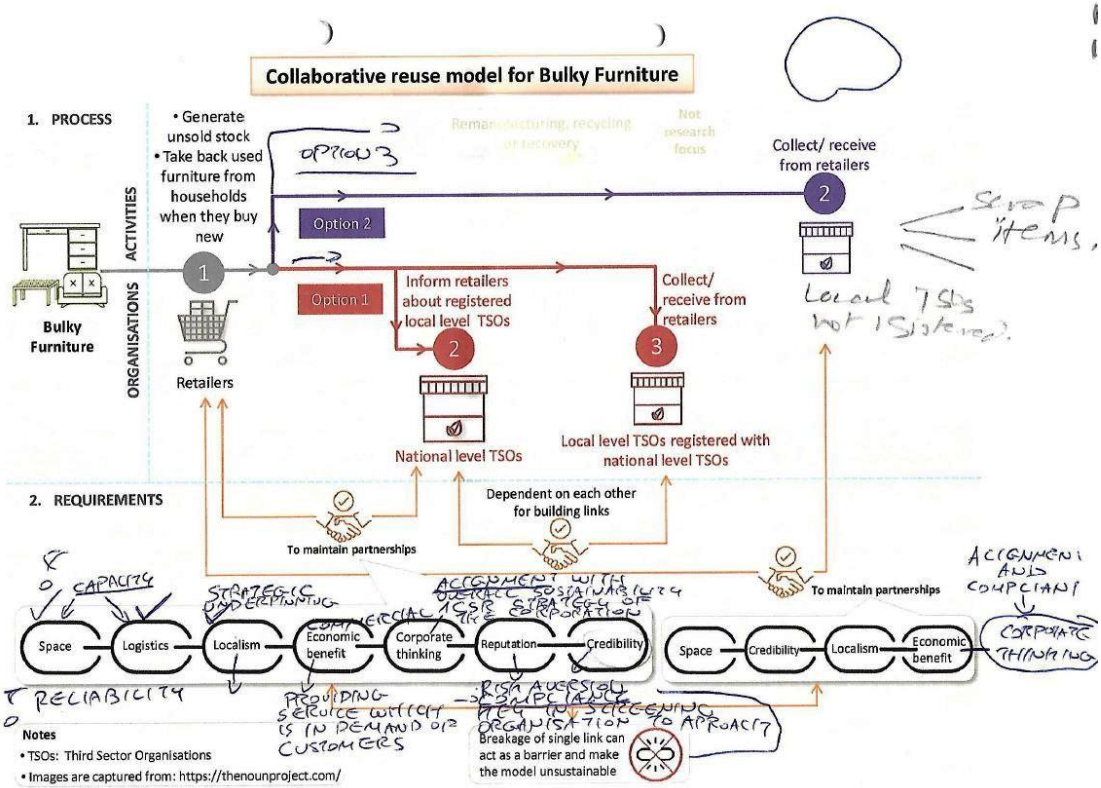
Research has revealed that third sector organisations (TSOs) are the key facilitators of re-use at organisational level in the UK. Re-use has been identified as a potentially profitable activity, depending on types of material and the sectors and strategies involved. This suggests the possibility of a long-term partnership between corporations and TSOs, in order to carry out re-use activities in a mutually beneficial way, which increases profitability, while reducing the quantity of waste generated. Research further demonstrated the importance of unsold stock as re-usable materials. However, unsold stock also reveals a concurrent disadvantage, in that its presence often exposes a flaw in business practice. This problem then often encourages corporations to seek solutions in the form of easily accessible technological solutions (reverse logistics, remanufacturing, recycling, and recovery). Engagement with technological solutions is clearly an important step; nonetheless, it is crucial to recognise that, as a society, we are at the edge of exploiting the limited resources of a finite planet. Therefore, these technological solutions are insufficient, particularly given that, there is a continuous rise in waste production and consumption at organisational level in the UK. Thus, acknowledging the importance of re-use, and exploring methods of adopting re-use strategies (a 'human action' solution) is one of the critical requirements for overcoming the growing problem; engagement with re-use will aid in conserving resources and preserving our world for future generations. Your input will be of great value and will make a vital contribution towards further exploration of this crucial issue, and towards encouraging re-use behaviour.

9.6.2 Evaluation Discussions (Transcripts)

The following outlines the discussions carried out with the organisations.

R3 feedback on the collaborative re-use model for Bulky furniture (Face-to-face):

Figure below demonstrates the raw data produced by R3 during discussion.



R: What do you think about the model?

I: The model seems quite useful in the sense that the requirements laid out are essential and can be aligned with our existing sustainability plan.

R: Can you explain how it can be aligned with you sustainability plan?

I: For instance, capacity is one of the essential requirements for making re-use the first option, which is represented in the model through 'Space' and 'Logistics'. Secondly, risk assessment, compliance, screening are some of the measures we consider while approaching the TSOs in creating partnership. By so doing, it aids in accessing the reputation and credibility of TSOs. Furthermore, the corporate thinking can be aligned with overall sustainability, CSR strategy of the corporation, which is an essential requirement to maintain partnership with both national-level TSOs and local-level TSOs. In the similar way, economic benefit is essential from a commercial point, while providing service which is in demand of customers. Finally, localism is not always an essential requirement; nonetheless, it depends on the strategic underpinning.

R: Thank you for the explanation. What improvements can be made in the model?

I: 'Reliability' is also one of the key requirements that is necessary for us to maintain long-term partnerships with national-level TSOs. In addition, it will be useful to indicate or present 'Requirements' in a manner that it does not represent hierarchy, as based on the current lay out the chain indicates a hierarchy from left to right.

R: Do you follow the Options in the same way as laid out in the model?

I: In terms of 'Process' in the model, all three options are adopted, but the priority varies depending on the store scale/size. That is; in small scale stores, Option 1 is prioritised and Option 2 is only adopted, when Option 1 is not available. However, in large scale stores, we prioritise Option 3 over Option 1. This is based on the fact that TSOs often has less capacity and thus Option 1 can only be prioritised depending on the accessibility and capacity.

R: Any final comments?

I: I would really appreciate if you could please update the model with suggestive feedback and share the model and thesis after its publication. This will act as one of the references in developing our new waste strategy that we are about to initiate in line with the concept of Circular Economy.

R: Thank you for your time.

C1 feedback on the collaborative re-use model for Construction materials (Telephone):

R: What do you think about the model?

I: The model is very well laid out and will be useful for us while upgrading our waste strategy.

R: Thank you. What improvements can be made in the model?

I: All the 'Requirements' are equally essential, however, the current chain indicate a hierarchy from left to right. Thus, it might be useful to present it in a manner that is clearer. In addition, the 'Requirements' should have another chain that is; 'Contractual requirement'. It is based on the fact that our waste strategy varies, based on the cliental requirements and the type of job (strip out, demolition or construction). Furthermore, although partnership with TSOs makes economic and social sense, nonetheless, because of the lack of a centralised structured re-use system, sometimes due to lack of time it becomes unviable to consider re-use over recycling and recovery.

R: Do you follow the Options in the same way as laid out in the model?

I: Yes, we follow the Options in the hierarchy (from 1 to 4) as laid out in the model. Currently, we are in the process of upgrading our waste strategy in line with the Circular Economy principles, thus we are adding one more Option before recycling and recovery, that is; remanufacturing via suppliers take back. Sending the materials such as carpet tiles, raised floor tiles, ceiling tiles from strip-out to manufacturers in the supply chain, instead of sending for recycling and recovery makes both environmental and financial sense.

R: Are there any further suggestions?

I: One further suggestion to be added in the model is the aim, which is not only limited to reducing waste and economic benefit, but also in saving CO_2 emissions. I would really appreciate of you could please update the model with suggestive comments and send it over, as it will be useful reference in developing and creating our recent waste strategy.

R: Thank you for your time.

T8 feedback on the collaborative re-use model for construction materials (Telephone):

I: Thanks for this brilliant and interesting document.

R: Thank you. What improvements can be made in the model?

Things that might come across more strongly either in the words or graphic illustration are that TSOs are often small and poorly resourced to do mammoth social action tasks. They may be in premises that are under-resourced and looking for ways to improve their environments when they take up construction materials. They may have access to large numbers of service users or volunteers but lacking in the expertise. Transportation is a high cost and complex to organise for the TSO. Like most organisations and sectors, storage is a big issue.

R: Are there any further suggestions?

I: The potential is that web-based media is a great source of materials and reference to how there could be re-use or up-cycling. There could also be more focused development of how corporates could work with key players in the TSO to find ways to match need to supply.

R: Thank you for your time.

T9 feedback on the collaborative re-use model for WEEE (Face-to-face):

R: What do you think about the model?

I: Currently, 95% of our supply chain consists of SMEs, IT organisations and council offices. Nonetheless, this inspiring, effective, and suggestive model provides a way by which we can deal directly with retailers and maintain long-term partnerships, that is: by registering with national-level TSOs, which have existing partnership with retailers.

R: Based on last interview that I had, I was told that you are partner with a retailer R1? What have you learned from that?

I: In terms of our past experience with retailers we have learned that it is crucial to emphasis on credibility and reputation to maintain long-term partnership with retailers. Thus, we are making investments into improving our operational system and procedures such as website and data-wiping process, as well as their certifications and other credentials. At this particular period in time our trade sales have slowed down, thus with a refocus on eBay, Salvage and new sales channels such as the online shop, we are working on our operation services coupled with a new sales and marketing strategy.

R: Are there any further suggestions?

I: Space, logistics, and economic benefit are key to run our social enterprise. Furthermore, based on the fact that our aim is to provide education and work experience for its service users and a valuable service to the community, CSR or corporate thinking is the requirement that we are capable to fulfil.

R: Thank you for your time.

R1 feedback on the collaborative re-use model for food materials (Telephone):

R: What do you think about the model?

I: The model is good and useful as at the current stage our sustainability plan is revolving around the similar area. However, it is important to acknowledge that the implementing new system and procedure to the existing business plan has its complexities, it is not as simple as it looks in the model. For instance, the

reason why credibility is critical to us, because it aids in accessing the technical standards of unsold food stock. That is; it allows to access if food materials are safe for human consumption or not.

R: So, what improvements can be made in the model?

I: Currently we are in partnership with national-level TSO for redistribution of unsold stock; however, in practice it is only viable at depot level and not at store level. The reason being is at store level most of the unsold food stock passes its expiry date and becomes unsuitable for human consumption. Thus, at store level we prefer Option of recycling, recovery, and AD. Nonetheless, at depot level any surplus food stock is redistributed to food banks via national-level TSO. Thus, the model can be updated by indicating another step in the chain or indicate the difference of choices in relation to store level and depot level.

R: Any final comments?

I: Despite our current ongoing partnership with a national-level TSO, the problem we find is they have limited storage facility. Thus, we are at the concept stage for developing an economical storage, that is; our own warehouse for storing the surplus unsold food stock and carry out the required checks and redistribution ourselves to both food banks and manufacturers.

R: Thank you for your time.

9.6.3 Reviewed Collaborative Re-use Models

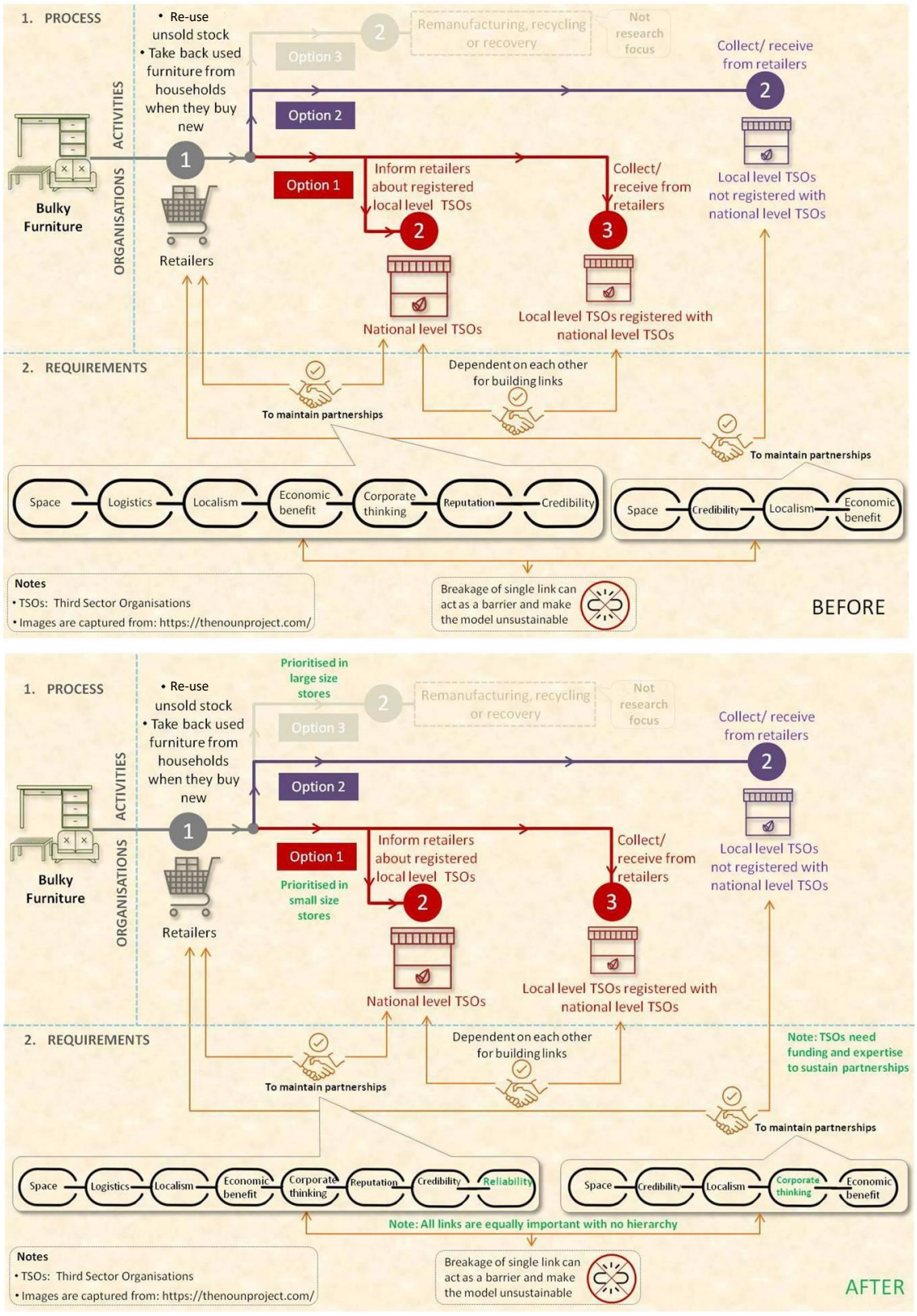


Figure 9.7: Reviewed collaborative re-use model for bulky furniture

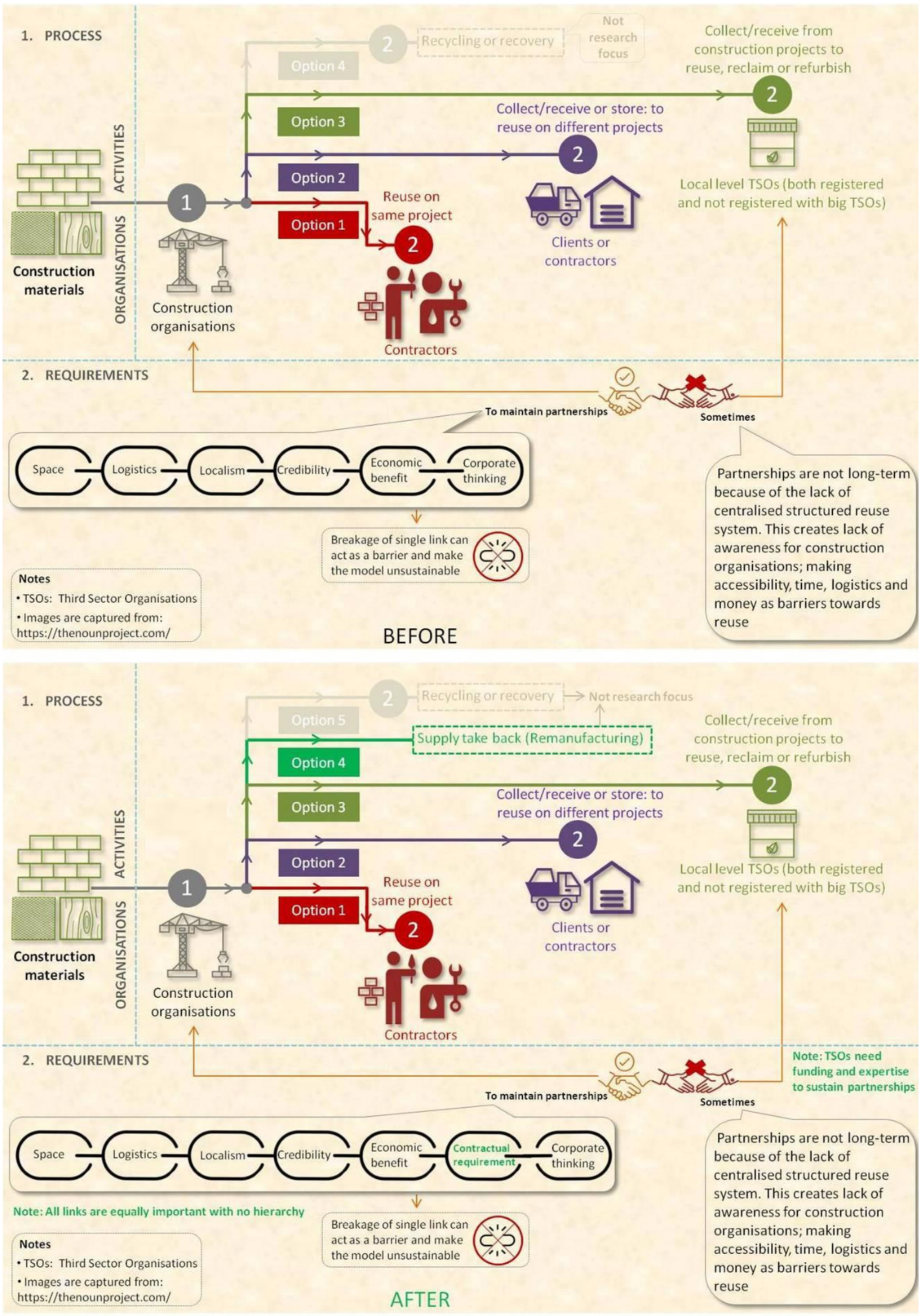


Figure 9.8: Reviewed collaborative re-use model for construction materials

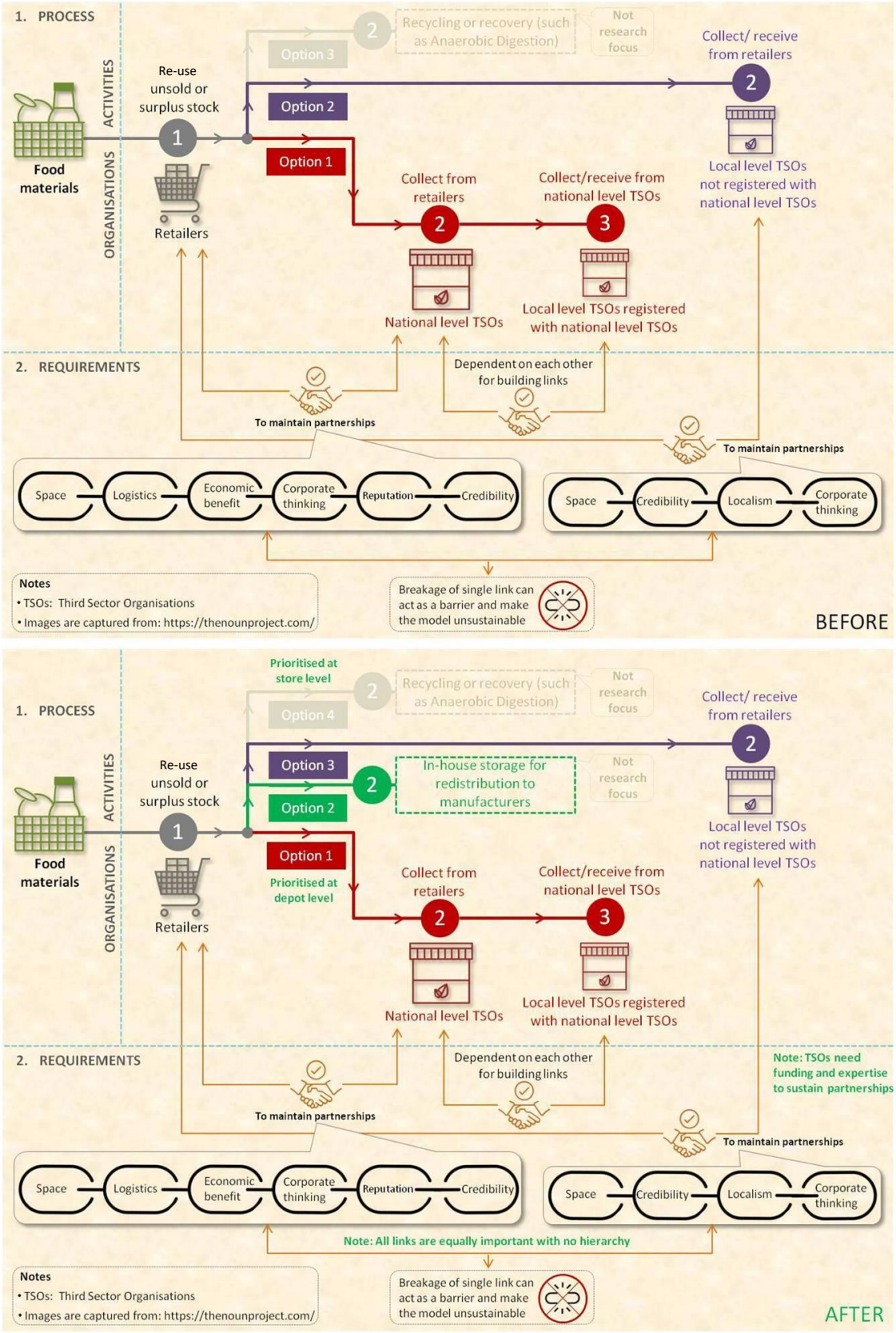


Figure 9.9: Reviewed collaborative re-use model for food materials

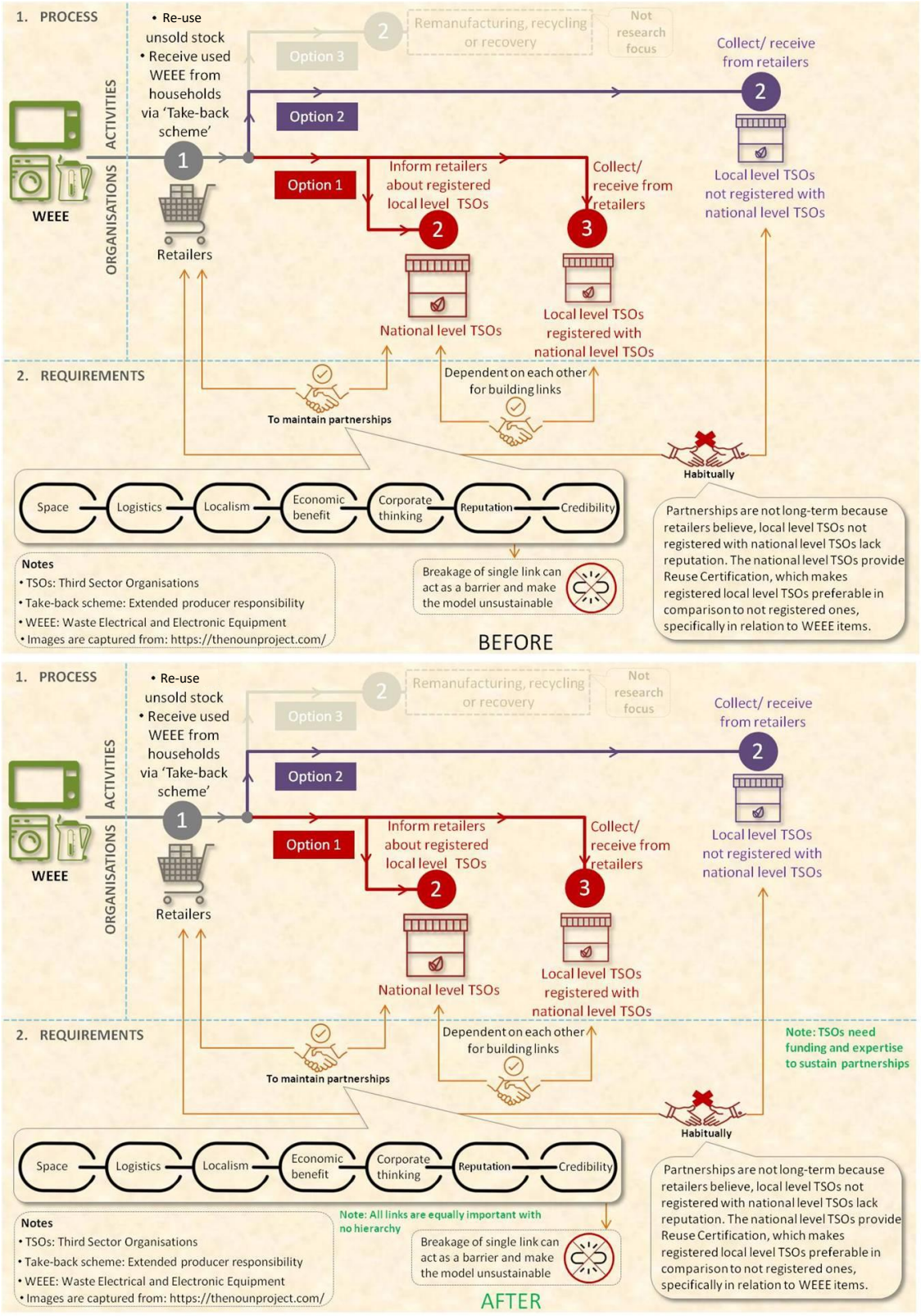


Figure 9.10: Reviewed collaborative re-use model for WEEE

10. BIBLIOGRAPHY

- Aarts, H. and Dijksterhuis, Ap. (2000) 'Habits as knowledge structures: automaticity in goal directed behaviour', *Journal of Personality and Social Psychology*, 78(1), pp.53-63.
- Aarts, H. and Dijksterhuis, Ap. (2003) 'The silence of the library: environment, situational norm, and social behaviour', *Journal of Personality and Social Psychology*, 84(1), pp.18-28.
- Aarts, H., Dijksterhuis, Ap., and Custers, R. (2003) 'Automatic normative behaviour in environments: the moderating role of conformity in activation situational norms', *Social Cognition*, 21(6), pp.447-464.
- Abbott, A., Nandeibam, S., and O'Shea, L. (2013) 'Recycling: social norms and warm-glow revisited', *Ecological Economics*, 90, pp.10-18.
- Abbott, W.F., and Monsen, R.J. (1979) 'On the measurement of corporate social responsibility: self-reported disclosures as a method of measuring corporate social involvement', *Acad Manage J*, 22(3), pp.501-515.
- Ackroyd, J., Coulter, B., Phillips, P.S., and Read, A.D. (2003) 'Business excellence through resource efficiency (betre): an evaluation of the UKs highest recruiting facilitated self-help waste minimization project', *Recourse Conservation Recycling*, 38, pp.271-299.
- Agee, J. (2009) 'Developing qualitative research questions: a reflective process', *International Journal of Qualitative Studies in Education*, 22, pp.431-447.
- Ahmed Memon, M. (2010) 'Integrated solid waste management based on the 3R approach.' *Springer*, 12(1), pp.30-40.
- Aini, A.M. (2014) *The development and rationale of sustainable and responsible property investment in malaysia: a modified institutional framework.* Thesis (PhD). England: Kingston University.
- Ajzen, I. and Fishbein, M. (1980) *Understanding attitudes and predicting social behaviour*. Englewood Cliffs: Prentice-Hall.
- Ajzen, I. (1991) 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, 50, pp.179-211.
- Alexander, C., Curran, A., Smaje, C., and Williams, I. (2009) 'Evaluation of bulky waste and re-use schemes in England', *Waste and Resource Management*, 162(3), pp.141-150.
- Alexander, C., and Smaje, C. (2008) 'Evaluating third sector re-use organisations in the UK: case-studies and analysis of furniture re-use schemes', *Resource, Conservation and Recycling*. 52, pp.719-730.
- Alexandru., E.I., and Taşnadi, A. (2014) 'From circular economy to blue economy', *Management Strategies Journal* 26 (4), pp.197-203.
- Allen, P. (2010) *The road to recession…and recovery*. Available at: https://www.theguardian.com/business/interactive/2009/jan/22/recession (Accessed: 18 July 2016).

- Amaratunga, D., Baldry, D., Sarshar, M., and Newton, R. (2002) 'Quantitative and qualitative research in the built environment: application of "mixed" research approach', *Work Study*, 51(1), pp.17-31.
- Andersen, M.S. (2007) 'An introductory note on environmental economics of the circular economy', *Sustain Sci*, 2, pp.133-140.
- Anderson, K. July (2011) *Climate Change: Going beyond dangerous*. Available at: http://www.slideshare.net/DFID/professor-kevin-anderson-climate-change-going-beyond-dangerous (Accessed: 18 April 2012).
- Anderson, R. May (2016) *The firms planning on making less and recycling more*. Available at: http://www.bbc.co.uk/news/business-35755492 (Accessed: 11 May 2016).
- Andrew, S., Boeni, H., Fitzpatrick, C., Kissling, R., and Luepschen, C. (2012) 'Definition of generic re-use operating models for electrical and electronic equipment', *Resources, Conservation and Recycling*, 65, pp.85-99.
- Arcury, T.A., and Quandt, S.A. (1999) 'Participant recruitment for qualitative research: a site-based approach to community research in complex societies', *Human Organisation*, 58(2), pp.128-133.
- Arksey, H., and Knight, P. (1999) *Interviewing for Social Scientists*, London: Sage.
- Armajani, B. (2008) *A Push-Pull strategy for change*. Available at: http://www.governing.com/columns/mgmt-insights/A-Push-Pull-Strategy-for.html (Accessed: 25 December 2015).
- Association of Director's of Environment, Economy, Planning and Transport, (2011) *Carbon sense for better waste management*. Shropshire: SKM Enviros.
- Atasu, A., Daniel, V., Guide, R., and Wassenhove, L.V.N. (2008) 'Product re-use economics in closed-loop supply chain research', *Production and Operation Management*, 17(5), pp.483-496.
- Avison, D., Lau, F., Myers, M., and Nielsen, P.A. (1999) 'Action Research', *Communications of the ACM*. 42(1), pp.94-97.
- Azar, C., Holmberg, J., and Karlsson, S. (2002) *Decoupling- past trends and protests for the future*. Environmental Advisory Council: ResearchGate.
- Baabereyir, A. (2009) *Urban environmental problems in Ghana: a case study of social and environmental injustice in solid waste management in Accra and Sekondi-Takoradi*. Thesis (PhD). England: University of Nottingham.
- Baharum, M.R. (2009) 'Determining key variables for solid waste management service delivery at shopping centres', *Proceeding of the 4th Annual BEAN Conference*, pp.78-86.
- Baker, S., Kousis, M., Richardson, D., and Young, S. (1997) *The politics of sustainable development: theory, Policy and Practice within the European Union*. London: Routledge.
- Banerjee, S., Gulas, C.S., and Iyer,E. (1995) 'Shades of green: a multidimensional analysis of environmental advertising.', *Journal of Advertising*, XXIV (2), pp.21-31.
- Bargh, J.A. and Ferguson, M.J. (2000) 'Beyond behaviorism: on the automaticity of higher mental processes', *Psychological Bulletin*, 126(6), pp.925-945.
- Bargh, J.A., and Tanya, L. (2000) *Studying the mind in the middle: a practical guide to priming and automaticity research*. New York: New York University.

- Barnes, S. (2012) *Is landfill tax supporting or distorting the waste hierarchy?* Available at: http://www.sca.com/en/recyclinguk/news/news-items/2012/is-landfill-tax-supporting-or-distorting-the-waste-hierarchy/ (Accessed: 14 November 2012).
- Barr, S., Gilg, A.W., and Ford, N.J. (2001) 'A conceptual framework for understanding and analyzing attitudes towards household-waste management', *Environment and Planning A*, 33, pp.2025-2048.
- Barr, S. and Gilg, A.W. (2005) 'Conceptualizing and analyzing household attitudes and actions to a growing environmental problem: development and application of a framework to guide local waste policy', *Applied Geography*, 25, pp.226-247.
- Barr, S. (2007) 'Factors influencing environmental attitudes and behaviours: a U.K. case study of household waste management', *Environment and Behaviour*, 39, pp.435-473.
- Barreteau, O., P. W. G. Bots, and K. A. Daniell. (2010) 'A framework for clarifying "participation" in participatory research to prevent its rejection for the wrong reasons', *Ecology and Society* 15(2), p.1 [Online]. Available at: http://www.ecologyandsociety.org/vol15/iss2/art1/.
- Baudrillard, J. (1998) *The consumer society myths and structures*. London: Sage publications.
- Bauer, M.W., and Gaskell, G. (2000) *Qualitative researching with text, image, and sound*. London: Sage publications.
- Baxter, J., and Eyles, J. (1997) 'Evaluating qualitative research in social geography: establishing rigour in interview analysis', *Transactions of the Institute of British Geographers*, 22(4), pp.505-525.
- Beasley, J., and Georgeson, R. (2016) *Re-use in the UK and Ireland*. North Yorkshire: Charted Institute of Waste Management.
- Beaverstock, J., and Boardwell, J. (2000) 'Negogiating globalization, translational corporations and global city financial centres in transient migration studies', *Applied Geography*, 20, pp.277-304.
- Beck, U. (2009) *World at risk*. Cambridge: Polity.
- Bekin, C., Carrigan, M., and Szmigin, I. (2007) 'Beyond recycling: 'commons-friendly' waste reduction at new consumption communities', *Journal of Consumer Behaviour*, 6(1), pp.271-286.
- Bell, D.V.J., and Cheung, Y.A. (2009) *Introduction to sustainable development*. Encyclopedia of life support systems.
- Bell, P.A., Greene, T.C., Fisher, J.D., and Baum, A. (2001) *Environmental Psychology*, 5th Edition. California: Wadsworth Group/ Thomson Learning.
- Benyus, J. (1998) *Biomimicry - Innovation inspired by nature*. New York: Harper Collins.
- Berelson, B. (1952) *Content analysis in communication research*. California: Free Press.
- Berg, B.L. (2004) *Qualitative research methods for the social sciences*. 5th Edition. USA: California state university.
- Bergold, J., and Thomas, S. (2012) 'Participatory research methods: a methodological approach in motion', *Forum: Qualitative Social Research*. 13 (1), p.1.

- Berke, P.R., and Conroy, M.M. (2000) ‘Are we planning for sustainable development? An evaluation of 30 comprehensive plans’, *Journal of the American Planning Association*, 66(1), pp.21-33.
- Berkowitz, A.D., chapter 1, (2004). *The social norms approach: theory, research, and annotated bibliography*. Thesis (PhD). Trumansburg: Independent Consultant.
- Beullens, P., Fleischmann, M., Ruwaard, J.M.B., and Wassenhove, L.N.V. (2001) ‘The impact of product recovery on logistics network design’, *Production and Operations Management*. 10(2), pp.156-173.
- Bhattacharya, S., Savaskan, R.C., and Wassenhove, L.N.V. (2004) ‘Closed-loop supply chain models with product remanufacturing’, *Management Science*. 50(2), pp.239-252.
- Biernacki, P., and Waldorf, D. (1981) ‘Snowball sampling: problems and techniques of chain referral sampling’, *Sociological methods and research*, 10(2), pp.141-163.
- Bizshipfts-Trend, (2012) *Push-Pull Business Management Model: Bridging the Transition from ‘World-of-Push’ to ‘World-of-Pull’*. Available at: http://bizshifts-trends.com/2012/06/28/push-pull-business-management-model-bridging-transition-%E2%80%98world-of-push%E2%80%99-%E2%80%98world-of-pull%E2%80%99/ [Accessed: 08 January 2016].
- Blackstock, K.L., Kelly, G.J., and Horsey, B.L. (2007) ‘Developing and applying a framework to evaluate participatory research for sustainability’, *Ecological Economic*. 60, pp.726-742.
- Blaikie, N. (2000) *Doing Social Research*. Cambridge: Polity Press/Blackwell.
- Blasco, M., and Zolner, M. (2010) ‘Corporate social responsibility in Mexico and France: exploring the role of normative institutions’, *Business and Society*. 49, pp.216-251.
- Blass, V.D., and Geyer, R. (2010). The economics of cell phone re-use and recycling. *Int J Adv Manuf Technol*. 47, 515-525.
- Boivie, A.A. (2013) *Change management: deciding whether to "push" or "pull"*. Available at: http://www.itbusiness.ca/blog/change-management-deciding-whether-to-push-or-pull/31268 [Accessed: 25 December 2015].
- Boone, D.A., and Boone, Jr. H.N. (2012) ‘Analyzing Likert data’, *Journal of Extension*, 50(2), Ar.no. 2TOT2.
- Booth, W.C., Colomb, G.G., and Williams J.M. (1995) *The craft of research*. Chicago: The University of Chicago.
- Bortoleto, A. P., Kurisu, K. H. and Hanaki, K. (2012) ‘Model development for household waste prevention behaviour’, *Waste Management*, (0).
- Bows, A., Anderson, K., and Upham, P. (2006) *Contraction and Convergence: UK carbon emissions and the implications for UK air traffic*. Tyndall Centre for climate change research, 40.
- Budeanu, A. (2007) ‘Sustainable tourist behavior - a discussion of opportunities for change.’, *International Journal of Consumer Studies.* 31, pp.499-508.
- Braungart, M., and Mcdonoguh, W. (2009) *Cradle to Cradle: Remaking the way we make things*. London: Vintage.
- Brennan, A. (1992) ‘Moral pluralism and the environment’, *Environmental Values*, 1(1), pp.15-33.

- Brook Lyndhurst Ltd. (2007) *Replicating success: Social enterprises and the waste sector in London*. London: Brook Lyndhurst.
- Browne, K. (2005) 'Snowball sampling: using social networks to research non-heterosexual women', *International Journal of Social Research Methodology*, 8(1), pp.47-60.
- Bryman, A. (2004) *Social research methods*. 2nd edition. Oxford: Oxford University Press.
- Budd, R.W., Thorp, R.K. and Donohue, L. (1967). *Content analysis of communications*. New York: The Macmillan Co.
- Bulkeley, H. and Gregson, N. (2009) 'Crossing the threshold: municipal waste policy and household waste generation', *Environment and Planning*, 41(4), pp.929-945.
- Burnley, S. (2001) 'The impact of the European landfill directive on waste management in the United Kingdom.', *Resources, Conservation and Recycling*, 32(3-4), pp.349-358.
- Burrell, G. and Morgan, G. (1989) *Sociological paradigms and organisational analysis: elements of the sociology of corporate life*. London: Heinemann Educational Books Ltd.
- CAG Oxfordshire, (2014) *Community Action Groups*. Available at: http://www.cagoxfordshire.org.uk/about-us (Accessed: 06 June 2014).
- Campbell, J.L. (2007) 'Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility', *Academy of Management Review*, 32(3), pp.946-967.
- Carifio, J., and Perla, R.J. (2007) 'Ten common misunderstandings, misconceptions, persistent myths and urban legends about likert-scales and likert response formats and their anidotes.' *Journal of Social Sciences*, 3(3), pp.106-116.
- Carlson, L., Grove, S.J., and Kangun, N. (1993) 'A content analysis of environmental advertising claims: a matrix method approach', *Journal of Advertising*, XXII(3), pp.27-39.
- Cashore, B. and Vestinsky. I. (2000) 'Policy network and firm behaviours: governance systems and firm responses to external demands for sustainable forest management', *Policy Sciences*, 33, pp.1-30.
- Castagna, A., Casagrande, M., Zeni, A., Girelli, E., Rada, E.C., Ragazzi, M., and Apostol, T. (2013) '3R's from citizens point of view and their proposal from a case-study.', *UPB Scientific Bulletin*, 75(4), pp.253-264.
- Cavana, R., Delahaye, B., and Sekaran, U. (2001) *Applied Business Research*. 1st edition. Milton, Qld.: Wiley.
- Champions 12.3, (2018) *A Historic Opportunity (online).* Available at: https://champions123.org/target-12-3/ (Accessed: 01 April 2018).
- Centre for Social and Economic Research on the Global Environment (1996) *Green taxes, waste management and political economy.* London: Centre for Social and Economic Research on the Global Environment, University of East Anglia and University College London.
- Chatterton, P. and Style, S. (2001) 'Putting sustainable development into practice? The role of local 'policy partnership networks', *Local* Environment, 6(4), pp.439-452.
- Chazan, D. (2002) *A World Drowning in Litter*. Available at: http://news.bbc.co.uk/1/hi/world/europe/1849302.stm (Accessed: 21 March 2016).

- Chiu, S.F., and Peng, J.C. (2010) 'An integrative model linking feedback environment and organizational citizenship behaviour', *The Journal of Social Psychology*, 150(6), pp.582-607.
- Cho, J., and Trent, A. (2006) 'Validity in qualitative research revisited', *Qualitative Research*, 6(3), pp.319-340.
- Christensen, P.N., Rothgerber, H., Wood, W., and Matz, D.C. (2004) 'Social norms and identity relevance: a motivational approach to normative behavior', *Society for Personality and Social Psychology*, 20, pp.1295-1309.
- Cialdini, R.B. (2003) 'Crafting normative messages to protect the environment', *Association for Psychological Science*, 12, pp.105-109.
- Cialdini, R.B. (2007) 'Descriptive social norms as underappreciated sources of social control', *Psychometrika*, 72(2), pp.263-268.
- Cialdini, R.B., Demaine, L.J., Sagarin, B.J., Barrett, D.W., Rhoads, K., and Winter, P.L. (2006) 'Managing social norms for persuasive impact', *Social Influence*, 1(1), pp.3-15.
- Cialdini, R.B., Reno, R.R. and Kallgren, C.A. (1990) 'A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places', *Journal of Personality and Social Psychology*, 58(6), pp.1015-1026.
- Clarke, M. J. (1992) 'Waste characterization studies and the solid waste hierarchy', *Resource Recycling*, (0), pp.75-84.
- Cleek, M.A., and Leonard, S.L. (1998) 'Can corporate codes of ethics influence behavior?', *Journal of Business Ethics*, 17, pp.619-630.
- Cochrane, A. (1998) 'Illusions of power interviewing local elites', *Environment and Planning*, 30(21), pp.21-32.
- Cole, C., Osmani, M., Quddus, M., Wheatley, A. and Kay, K. (2014) 'Towards a Zero Waste Strategy for an English Local Authority', *Resources, Conservation and Recycling*, 89, pp.64-75.
- Cole, C., and Gnanapragasam, A. (2017) *Community repair: enabling repair as part of the movement towards a circular economy.* Research report for external body. London: Nottingham Trent University for The Restart Project.
- Cole, C., Gnanapragasam, A. and Cooper, T. (2017) 'Towards a Circular Economy: Exploring Routes to Re-use for Discarded Electrical and Electronic Equipment', *Procedia CIRP*, 61, pp.155-160.
- Collier, J. and Esteban, R. (2007) 'Corporate social responsibility and employee commitment', *Business Ethics: A European Review,* 16(1), pp.19-33.
- Condon, D., Medley, K.E., and Zhou, Y. (2006) 'Shared learning: feminist student research on household re-use behaviour', *Journal of Geography*. 105(5), pp.209-215.
- Connett, P. (2006) 'Zero waste win.*' Alternatives Journal*, 32(1) [Online]. Available at: http://www.alternativesjournal.ca/magazine/zero-waste-321 (Accessed: 26 October 2012).
- Cooper, T. (2010) *Longer lasting products: alternatives to the throw-away society*. Surrey: Gower Publishing Ltd.
- COP21, (2015) *United nations conference on climate change*. Available at: http://www.cop21.gouv.fr/en/the-circular-economy-and-innovation-at-the-heart-of-cop21/ (Accessed: 22 January 2016).

- Cordano, M., and Frieze, I.H. (2000) 'Pollution reduction preferences of U.S. environmental managers: applying Ajzen's theory of planned behaviour', *Academy of Management Journal*, 43(4), pp.627-641.
- Cottrell. H. (2013) *Surrey Re-use Network.* Available at: http://www.surreycc.gov.uk/environment-housing-and-planning/waste-and-recycling/ideas-to-reduce-your-waste/surrey-re-use-network (Accessed: 14 February 2013).
- Cox, J., Giorgi, S., Sharp, V., Strange, K., Wilson, D., and Blakey, N. (2010) 'Household waste prevention - a review of evidence', T*he journal of the International Solid Wastes and Public Cleansing Association*, 28(3), pp.193-219.
- Creswell, J.W. (2003) *Research design: Qualitative, quantitative, and mixed-methods approaches*. 2nd edition. Thousand Oaks: Sage
- Creswell, J.W. (2006) *Five qualitative approaches to inquiry*. 3:39 pm, pp.53-84.
- Creswell, J.W. (2007) *Qualitative inquiry and research design*. Thousands Oaks: Sage.
- Creswell, J.W. (2014) *Research design: Qualitative, quantitative, and mixed-methods approaches*. 4th edition. Thousands Oaks: Sage.
- Cruz, J.M. (2008) 'Dynamics of supply chain networks with corporate social responsibility through integrated environmental decision-making', *European Journal of Operational Research*, 184, pp.1005-1031.
- Curran, A., Heaven, S., and Williams, I.D. (2007) 'Management of household bulky waste in England', *Resource, Conservation and Recycling*, 51, pp.78-92.
- Curran, A., and Williams, I.D. (2010) 'The role of furniture and appliance re-use organisations in England and Wales', *Resources, Conservation and Recycling*, 54, pp.692-703.
- Dawson, S. (1986) *Analysing organisations*. London: Macmillan Education Limited.
- DBIS, (2010) *Manufacturing in the UK: an economic analysis of the sector*. London: DBIS, PAPER NO. 10A.
- DBIS, (2013) *UK construction: An economic analysis of the sector*. London: DBIS, BIS/13/958.
- DBIS, (2014) *Good for business and society: government response to call for views on corporate responsibility*. London: DBIS, BIS/14/651.
- DCLG, (2011) *Planning policy statement 10: Planning for sustainable waste management*. Surrey: DCLG.
- DCLG, (2012) *Memorandum - post legislative scrutiny Greater London Authority (2007) Act*. London: DCLG, Cm 8428.
- DECC, (2011) *UK emissions statistics: frequently asked questions*. London: DECC.
- DECC, (2012) *2011 UK greenhouse gas emissions, provisional figures and 2010 UK greenhouse gas emissions, final figures by fuel type and end-user*. London: DECC.
- Dedicoat, C. (2016) *The importance of a circular economy*. Available at: https://newsroom.cisco.com/feature-content?type=webcontentandarticleId=1738213 (Accessed: 16 August 2016).
- DEFRA, (2004) *Promoting pro-environmental behaviour: Existing evidence to inform better policy making*. London: DEFRA.

- DEFRA, (2005) *Behaviour change - scoping the way forward*. Oxfordshire: DEFRA.
- DEFRA, (2006) *What happens to* waste. Available at: http://www.DEFRA.gov.uklENVIRONMENT/ waste/topics/compost/ (Accessed: 12 February 2013).
- DEFRA, (2007) *Waste strategy for England 2007*. Norwich: TSO (The Stationery Office), (PB12596).
- DEFRA, (2009a) *Benefits of third sector involvement in waste management*. London: DEFRA, WR0506.
- DEFRA, (2009b) *Household waste prevention evidence review*. London: DEFRA, WR1204.
- DEFRA, (2010a) *Reducing the impact of business waste through the business resource efficiency and waste programme*. London: National Audit Office, 2010. id 50.
- DEFRA, (2010b) *UK meets 2010 landfill directive target and responds to landfill consultations*. UK: DEFRA
- DEFRA, (2010c) *Recycling activities in SMEs: a survey*. England: DEFRA.
- DEFRA, (2010d) *Remanufacturing in the UK. UK: The Centre for Remanufacturing and Re-use.* UK: DEFRA.
- DEFRA, (2011a) *Business waste prevention evidence review: L1m1- technical report*. UK: Brook Lyndhurst, Oakdene Hollins and Resource Recovery Forum, (WR1403).
- DEFRA, (2011b) *Consultation on recovery and recycling targets for packaging waste for 2013-2017*. London: DEFRA.
- DEFRA, (2011c) *Government review of waste policy in England 2011*. London: DEFRA.
- DEFRA, (2011d) *The further benefits of business resource efficiency*. UK: Oakdene Hollins.
- DEFRA, (2012a) *Progress with delivery of commitments from the government's review of waste policy in England (2011)*. England: DEFRA.
- DEFRA, (2012b) *Red tape challenge- environment theme proposal*. London: DEFRA.
- DEFRA, (2012c) *Guidance on the legal definition of waste and its application*. London: DEFRA.
- DEFRA, (2013a) *Local Authorities*. Available at: http://www.DEFRA.gov.uk/environment/waste/local-authorities/ (Accessed: 13 February 2013)
- DEFRA, (2013b) *Waste Prevention Programme for England Call for evidence*. Available at: https://www.gov.uk/government/consultations/call-for-evidence-waste-prevention-programme-for-england (Accessed: 25 April 2013).
- DEFRA, (2013c) *Review of Defra funding for WRAP*. London: DEFRA.
- DEFRA, (2015a) *Resource management: a catalyst for growth and productivity*. London: DEFRA, PB 14293.
- DEFRA, (2015b) *UK statistics on waste*. London: DEFRA.
- DEFRA, (2015c) *Digest of waste and resource statistics - 2015 edition*. London: DEFRA, PB14292.
- DEFRA, (2016) *UK Statistics on Waste.* London: DEFRA.

- DEFRA, (2018) *Carrier bags: why there's a charge*. Avaialble at: https://www.gov.uk/government/publications/single-use-plastic-carrier-bags-why-were-introducing-the-charge/carrier-bags-why-theres-a-5p-charge (Accessed: 08 October 2018).
- Dekker, R., Fleischmann, M., Laan, E.V.D., Nunen, A.E.E.V., Ruwaard, J.M.B., and Wassenhove, L.N.V. (1997) 'Quantitative models for reverse logistics: a review', *European Journal of Operational Research*. 103, pp.1-17.
- DELWP, (2015) *Purposive and Snowball Sampling*. Available at http://www.delwp.vic.gov.au/DSE/wcmn203.nsf/LinkView/D340630944BB2D51CA25708900062E9838C091705EA81A2FCA257091000F8579/ (Accessed: 21 May 2015).
- Denzin, N. K. (1989) *The research act: a theoretical introduction to sociological methods*. 3rd Edition. New Jersey: Prentice Hall.
- Devine, F., and Heath, S. (1999) *Sociological research methods in context*. Basingstoke: Macmillan.
- Dewhurst, H. and Thomas, R. (2003) 'Encouraging sustainable business practices in a non-regulatory environment: a case study of small tourism firms in a UK national park', *Journal of sustainable tourism,* 11(5), pp.383-403.
- Dijksterhuis, Ap., Aarts, H., Bargh, J.A., and Knippenberg, Ad.V. (2000) 'On the relation between associative strength and automatic behaviour', *Journal of Experimental Social Psychology*, 36, pp.531-544.
- Dijksterhuis, Ap., and Bargh, J.A. (2001) *The perception-behaviour expressway: automatic effects of social perception on social behaviour*. New York: New York University.
- Dindarian, A., Gibson, A.A.P., and Quariguasi-Frota-Neto, J. (2012) 'Electronic product returns and potential re-use opportunities: a microwave case study in the United Kingdom', *Journal of Cleaner Production*, 32, pp.22-31.
- Dolan, P., Hallsworth, M., Halpern, D., King, D., Metcalfe, R., and Vlaev, I. (2012) 'Influencing behaviour: the mindspace way', *Journal of Economic Psychology*, 33, pp.264-277.
- Drucker, P.F. (1999) *Change leaders*. Available at http://www.inc.com/magazine/19990601/804.html (Accessed: 19 August 2016).
- Drucker, P.F. (2001) *Management Challenges for the 21st Century*. California: HarperBusiness.
- EC, (2007) *Waste policy and innovation - a methodological approach*. Spain: European Commission, Joint Research Centre (DG JRC), Institute for Prospective Technological Studies.
- EC, (2010) *Europe 2020: a European strategy for smart, sustainable and inclusive growth*. Brussels: Communication from the Commission.
- EC, (2016) *Corporate Social Responsibility*. Available at http://ec.europa.eu/growth/industry/corporate-social-responsibility/ (Accessed: 15 February 2016).
- ECAP, (2018) *European Clothing Action Plan (online).* Available at: http://www.ecap.eu.com/ (Accessed: 01 April 2018).
- ECDGE, (2008) *Analysis of the evolution of waste reduction and the scope of waste prevention*. Deurne: European Commission DG Environment, (ENV.G.4/FRA/2008/0112).

- ECDGE, (2012a) *Directive 2008/98/EC on waste (Waste Framework Directive)*. Available at: http://ec.europa.eu/environment/waste/framework/index.htm (Accessed: 15 February 2013).
- ECDGE, (2012b) *Waste Prevention - Handbook: Guidelines on waste prevention programmes*. Paris: BioIntelligence Service S.A.S.
- Edelenbos, J. (1999) 'Desing and management of participatory public policy making', *Public Management: an international journal of research and theory*, 1(4), pp.569-578.
- EIRIS, (2012) *Evolving markets: what's driving ESG in emerging economies?* London: EIRIS.
- Ekins, P., Simon, S., Deutsch, L., Folke, C., and De Groot, R. (2003) 'A framework for the practical application of the concepts of critical natural capital and strong sustainability', *Ecological Economics*, 44, pp.165-185.
- Ekstrom, K.M. (2015) *Waste management and sustainable consumption: Reflections on consumer waste*. Oxon: Routledge.
- Ekvall, T., Assefa, G., Bjorklund, A., Eriksson, O., and Finnveden, G. (2007) 'What life-cycle assessment does and does not do in assessments of waste management', *Waste Management*, 27, pp.989-996.
- Elinkgton, J., and Zeitz, J. (2014) *The breakthrough challenge: 10 ways to connect today's profits with tomorrow's bottom line*. California: Jossey-Bass.
- EMF, (2013a) *Towards the circular economy*. Volume 1: UK.
- EMF, (2013b) *Towards the circular economy*. Volume 2: UK.
- Elo, S., and Kyngas, H. (2007) 'The qualitative content analysis process', *Journal of Advanced Nursing*. 62(1), pp.107-115.
- Environment Agency, (2009) *Control of landfill gas containing low concentrations of methane*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291031/scho1008bouu-e-e.pdf (Accessed: 26 October 2018).
- Environment Agency, (2013) *Waste data and information*. Available at: http://www.environment-agency.gov.uk/research/library/data/34169.aspx (Accessed: 20 December 2013).
- Environment Agency, (2015) *Waste data and infomration.* Avaialble at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/563883/Waste_management_2015_summary.pdf (Accessed: 20 August 2017).
- Environment and Heritage service, (2005) *Waste management strategy for Northern Ireland: Towards resource management*. Belfast: Environment and Heritage Service.
- Environmentalist Every Day, (2011) *History of Solid Waste* Management. Available at: http://www.environmentalistseveryday.org/publications-solid-waste-industry-research/information/history-of-solid-waste-management/index.php (Accessed: 19th February 2013).
- Environment times, (2015) 'Business facing sustainability crunch.', *Environment times*, 16(2), p.42.
- Erlandson, D.A., Harris, E.L., Skipper, B.L., and Allen, S.D. (1993) *Doing naturalistic inquiry: a guide to methods: a guide for methods*. Sage publications.

- ERN, (2015) *Remanufacturing market study*. Available at: http://www.google.co.uk/url?sa=tandrct=jandq=andesrc=sandsource=webandcd=3andcad=rjaanduact=8andved=0ahUKEwjxicrz-q3cAhXBY8AKHdTXCU8QFgg4MAIandurl=http%3A%2F%2Fwww.remanufacturing.eu%2Fassets%2Fpdfs%2Fremanufacturing-market-study.pdfandusg=AOvVaw25BtvHTwTdBQHMrxUVVJTS (Accessed: 20th July 2018).
- Essex, J., (jonathan.essex@bioregional.com), 18 April (2012). RE: Research Proposal (PhD). Email to P.Tavri (purvatavri@gmail.com).
- EUR - Lex, (2018a) *Packaging and packaging waste*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l21207 (Accessed: 15 April 2018).
- EUR - Lex, (2018b) *End-of-life vehicles*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l21225 (Accessed: 15 April 2018).
- European Environment Agency, (2018) *end-of-pipe technology*. Available at: https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/end-of-pipe-technology (Accessed: 06 May 2018).
- Eurostat, (2016a) *End-of-life vehicle statistics*. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/End-of-life_vehicle_statistics (Accessed: 11 April 2016).
- Eurostat, (2016b) *Waste statistics - electrical and electronic equipment*. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Waste_statistics_-_electrical_and_electronic_equipment (Accessed: 11 April 2016).
- Fearing, F. (1953) 'Towards a psychological theory of human communication', *Journal of Personality*, 22, pp.71-88.
- Feldmann, K., Reinhart, G., Seliger, G., and Westkamper, E. (1999) 'Integrated development of assembly and disassembly, scientific technical committees', *Germany: CIRP*, 48(2), pp.557-565.
- Fell, D, Cox, J., and Wilson, D.C. (2010) 'Future waste growth, modelling and decoupling', *Waste management and Research*, 28(3), pp.281-286.
- Fielding, M. (1993) *Effective communication in organisations: preparing messages that communicate*. Kenwyn, Juta and Co.
- Fielding, K.S., McDonald, R., and Louis, W.R. (2008) 'Theory of planned behaviour, identity and intentions to engage in environmental activism', *Journal of Environmental Psychology*, 28, pp.318-326.
- Finn, J.A. (2005) *Getting a PhD: an action plan to help manage your research, your supervisors and your project*. Oxon: Routledge.
- Finnveden, G., Bjorklund, A., Ekvall, T., and Moberg, A. (2007) 'Environmental and economic assessment methods for waste management decision-support: possibilities and limitations', *Waste Management and Research*, 25, pp.263-269.
- Finnveden, G., Hauschild, M.Z., Ekvall, T., Guinee, J., Heijungs, R., Hellweg, S., Koehler, A., Pennington, D., and Suh, S. (2009) Recent developments in life cycle assessment', *Journal of Environmental Management*, 91, pp.1-21.

- FOEN, (1998) *ORDINANCE ON THE RETURN, THE TAKE BACK AND THE DISPOSAL OF ELECTRICAL AND ELECTRONIC EQUIPMENT (ORDEE)*. Available at: http://www.rezagos.com/descargas/ORDEE.pdf (Accessed: 28 February 2020).
- Folkestad, B. (2008) *Analysing interview data: possibilities and challenges*. Eurosphere Online Working Paper Series, 13, ISSN 1890-59886.
- Foster Jr, S.T., Sampson, S.E., and Dunn, S.C. (2000) 'The impact of customer contact on environmental initiatives for service firms', *International Journal of Operations and Production Management*, 20(2), pp.187-203.
- Freebody, P. (2003) *Qualitative research in education: interaction and practice*. London: Sage Press.
- Friedman, M. (1970) *The Social Responsibility of Business is to Increase its Profits*. The New York Times Magazine.
- Friends of the Earth for the planet for people, (2000) *Green house gases and waste management options*. London: FoE, (Briefing).
- FoE, (2001) *Highlights of waste strategy 2000*. London: FoE.
- Fryer, D. (1991) 'Qualitative methods in occupational psychology: reflections upon why they are so useful but so little used', *The occupational psychologist*, 14, pp.3-6.
- Fudge, S., and Peters, M. (2011) 'Behaviour change in the uk climate debate: an assessment of responsibility, agency and political dimensions', *Sustainability*, 3, pp.789-808.
- Gadepalli, S.D. (2015). Book review: waste management and sustainable consumption - reflections on consumer waste', *Indian Institute of Management Calcutta*, 42(2), pp.247-249.
- Gamba, R. J., and Oskamp, S. (1994) 'Factors influencing community residents' participation in commingled curbside recycling programs', *Environment and Behaviour*, 26, pp.587-612.
- Gersick, C.J. (1988) 'Time and transition in work teams: towards a new model of group development', *Academy of Management Journal*, 31, pp.9-41.
- Gertsakis, J. and Lewis, H. (2003) *Sustainability and the waste management hierarchy*. Retrieved on January, 30, 2008.
- Geurts, J.L.A., and Joldersma, C. (2001) 'Methodology for participatory policy analysis', *European Journal of Operational Research*. 128, pp.300-310.
- Gilbert, N. (2010) *Using Nvivo Audio-Coding: Practical, Sensorial and Epistemological Considerations*. Available at: http://sru.soc.surrey.ac.uk/SRU60.pdf (Accessed: 17 September 2018).
- Giljum, S., Hak, T., Hinterberger, F., and Kovanda, J. (2005) 'Environmental governance in the European Union: strategies and instruments for absolute decoupling', *International Journal for Sustainable Development*, 8(1/2), pp.31-46.
- Gill, J., and Johnson, P. (2002) *Research methods for managers*. 3rd Edition, Thousand Oaks, London: Sage.
- Glaser, B.G., and Strauss, A. (1967) *The discovery of grounded theory*. Chicago: Aldine.
- Gliner, J. (1994) 'Reviewing qualitative research: proposed criteria for fairness and rigor', *The Occupational Therapy Journal of Research*, 14(2), pp.78-90.

- GFN, (2015) *Do we fit on the planet?* Avaialble at: http://www.footprintnetwork.org/en/index.php/GFN/page/world_footprint/. (Accessed: 15 December 2015).
- GFN, (2018) *Country Overshoot Days*. Avaialble at: https://data.footprintnetwork.org/#/countryTrends?cn=229&type=earth (Accessed: 15 October 2018).
- Gockeritz, S., Schultz, P.W., Rendon, T., Cialdini, R.B., Goldstein, N.J. and Griskevicius, V. (2010) 'Descriptive normative beliefs and conservation behaviour: the moderating roles of personal involvement and injunctive normative beliefs', *European Journal of Social Psychology*, 40, pp.514-523.
- Goodwin, P., Brown, S., Haigh, I.D., Nicholls, R.J. and Matter., J.M. (2018) 'Adjusting Mitigation Pathways to Stabilize Climate at 1.5 degrees C and 2.0 degrees C Rise in Global Temperatures to Year 2300.', *Earths Future*, 3(3), pp.601-615.
- Goffman, E. (1981) *Forms of talk*. University of Pennsylvania Press.
- Goldstein, N.J., Cialdini, R.B., and Griskevicius, V. (2008) 'A room with a viewpoint: using social norms to motivate environmental conservation in hotels', *Journal of Consumer Research*, 53(3), pp.472-482.
- Gray, R., Kouhy, R., and Lavers, S. (1995) 'Methodological themes: constructing a research database of social and environmental reporting by UK organisations', *Accounting, Auditing and Accountability Journal*, 8(2), pp.78-101.
- Green futures magazine, (2012) *Industrial symbiosis: a thing worth backing*. Available at: http://www.forumforthefuture.org/greenfutures/articles/industrial-symbiosis-thing-worth-backing (Accessed: 25 October 2012).
- Greene, J.C. (2007) *Mixed-method in social inquiry*. John Wiley and Sons publication.
- Gregson, N., Crang, M., Laws, J., Fleetwood, T., and Holmes, H. (2013) 'Moving up the waste hierarchy: car boot sales, re-use exchange and the challenges of consumer culture to waste prevention', *Resources, Conservation and Recycling*, 77, pp.97-107.
- Griskevicius, V., Cialdini, R.B., and Goldstein, N.J. (2008) 'Social norms: an underestimated and underemployed lever for managing climate change', *IJSC*, 3, pp.5-13.
- Grix, J. (2004) *The foundations of research*. London: Palgrave.
- Groesbeek, M. J. (2011) *Corporate citizenship in a civil economy*. Institute for New Economic Thinking: Sovereignty and Institutional Design in the Global Age: The Global Market and the nation States.
- Groot, J.I.M, and Steg, L. (2007) 'General beliefs and the theory of planned behaviour: The role of environmental concerns in the TPB', *Journal of Applied Social Psychology*, 37(8), pp.1817-18thirty-six.
- Groot, J.I.M, and Steg, L. (2009) 'Mean or green: which values can promote stable pro-environmental behaviour?', *Conservation Letters*, 2, pp.61-66.
- Guadagno, R., and Cialdini, R.B. (2005) 'Online persuasion and compliance: social influence on the internet and beyond', *In The social net: Understanding human behavior in cyberspace*, pp.91-113.

- Guide, V.D.R., and Wassenhove, L.N.V. (2009) 'The evolution of closed-loop supply chain research', *Operations Research,* 57(1), pp.10-18.
- Guba, E.G., and Lincoln, Y.S. (1985) *Naturalistic inquiry*. New York: Sage.
- Gutherie, J., and Abeysekera, I. (2006) 'Content Analysis of social, environmental reporting: what is new?', *Journal of Human Resource Costing and Accounting*, 10(2), pp.114-126.
- Gutherie, J., Petty, R., and Yongvanich, K. (2004) 'Using content analysis as a research method to inquire into intellectual capital reporting', *Journal of Intellectual Capital*, 5(2), pp.282-293.
- Hails, C. (Ed) (2006) *Living Planet Report World Wildlife Fund for Nature*. Gland.
- Hakami, B.A. (2009) *Evaluation of the household waste management system in the East of England,UK*. Thesis (PhD). Norwich, England: University of East Anglia.
- Hands, V. (2009) *Sustainable development and local planning: A study of the plan making process in the London Borough of Southwark*. Thesis (PhD). England: London School of Economics and Political Science.
- Hargreaves, T. (2011) 'Practice-ing behaviour change: applying social practice theory to pro-environmental behaviour change', *Journal of Consumer Culture*, 11, pp.79-99.
- Hawken, P., Lovins, A., and Lovins L. H. (1999) *Natural capitalism*, 1st edition. USA.
- Hawkin, G. (2006) *The ethics of waste: how we relate to rubbish*. Oxford: Rowman and Littlefiled publishers.
- Hawkins, R.G.P., and Shaw, H.S. (2004) *The Practical Guide to Waste Management Law*. 1st edition. USA, VA: Thomas Telford.
- Hayes, J. (2014) *The theory and practice of change management*. 4th edition. New York: Palgrave Macmillan.
- HM Treasury, (2007) *The future role of the third sector in social and economic regeneration, final report*. The Stationery Office (TSO). Norwich: HM Treasury, Cm 7189.
- Hogwood, B.W., and Gunn, L.A. (1984) *Policy analysis for the real world*. Oxford: Universtiy Press.
- Holloway, I. (1997) *Basic Concepts for Qualitative Research*. Oxford: Blackwell.
- Holmes, J. R. (1983) 'The private sector in waste management in the U.K. (a new partnership with the public authorities)', *Waste Management and Research,* 1, pp.267-270.
- Holsti, O.R. (1968) *Content Analysis, In G.Lindzey and E.Aronson (Eds.), The Handbook of Social Psychology*. 2nd edition. pp.596-692, Vol.II. New Delhi: Amerind Publishing Co.
- Homan, R. (2002) 'The principle of informed consent: the ethics of gate keeping, in M. Mcnamee and D. Bridges', *The Ethics of Educational Research*, pp.23-39.
- Hopkins, K., and Elliott, L. (2009) *UK GDP falls faster than expected.* Available at: https://www.theguardian.com/business/2009/jul/24/uk-gdp-record-fall (Accessed: 26 July 2016).
- House of Commons, (2009) *Landfill tax : recent developments*. London: House of Commons.
- House of Lords, (2008) *Waste Reduction- Volume I: Report*. London: House of Lords, id 397.
- Howell, D. (2016) *The 5p plastic bag charge: All you need to know*. Available at: http://www.bbc.co.uk/news/uk-34346309 (Accessed: 01 August 2016).

- Hughes, A. (1999) ‘Constructing economic geographies from corporate interviews: insights from cross-country comparison of retailer supplier relationships’, *Geoforum*, 30, pp.thirty-six3-374.
- Hui, E.C.M., Langston, C., Shen, L.Y., and Wong, F.K.W. (2008) ‘Strategic assessment of building adaptive re-use opportunities in Hong Kong’, *Building and Environment*, 43, pp.1709-1718
- Humphrys, J. (2012) ‘My green Life.’, *Resurgence and Eologist*, 27(4), p.11.
- IPCC, (2014) *Sustainable Development and equity*. Chapter 4: IPCC.
- ICE, (2011) *Embodied energy and carbon- the ICE database*. Available at: http://www.circularecology.com/embodied-energy-and-carbon-footprint-database.html#.VinueX6rSUk (Accessed: 22 November 2012).
- IMechE, (2013) *Global food waste not, want not*. 10th January 2013, UK: Institute of Mechanical Engineers.
- Irvine, A. (2011) ‘Duration, Dominance and Depth in Telephone and Face-to-Face Interviews: A Comparative Exploration’, *International Journal of Qualitative Methods*, 10(3), pp. 202-220.
- Jackson, T. (2005) ‘Live better by consuming less? Is there a "double dividend" in sustainable consumption?’, *Journal of Industrial Ecology*, 9(1-2), pp.19-thirty-six.
- Jackson, T. (2009) *Prosperity without growth*. London and New York: Earth scan.
- Janette A., Ben C., Paul S. P., and Adam D. R. (2003) ‘Business excellence through resource efficiency (betre): an evaluation of the UKs highest recruiting facilitated self-help waste minimisation project’, *Resources, Conservation and Recycling*, 38, pp.271-299. id 319.
- Johns, R. (2010) *Likert items and scales*. University of Strathclyde: SQB method fact sheet.
- Johnson A. (2007) *The Development of Waste Management Law.* Available at: ehttp://www.iswa.org/uploads/tx_iswaknowledgebase/538338_Paper.pdf.-http://www.coll.mpg.de/text/comparison-english-and-german-packaging-waste-management-law (Accessed: 26 June 2015).
- Johnson, A.P. (2012) *Chapter 1 in a Short guide to Action Research*. 4th edition, Mankato, Pearson.
- Johnson, R.B., and Onwuegbuzie, A.J. (2004) ‘Mixed-methods research: a research paradigm whose time has come’, *American Educational Research Association*, 33(7), pp.14-26.
- Johnson, R.B., Onwuegbuzie, A.J., and Turner, L.A. (2007) ‘Towards a definition of mixed-methods research’, *Journal of mixed-method research*, 1(2), pp.112-133.
- Jorgensen, A., Bocq, A.L., Nazarkina, L., and Hauschild, M. (2008) ‘Methodologies for social life cycle assessment’, *Int Journal of Life Cycle Assessment*, 13 (2), pp.96-103.
- Jose, A., and Lee, S.M. (2007) ‘Environmental reporting of global corporations: a content analysis based on website disclosures’, *Journal of Business Ethics*, 72(4), pp.307-321.
- Kaiser, F.G., and Wilson, M. (2004) ‘Goal-directed conservation behaviour: the specific composition of a general performance’, *Personality and Individual differences*, 36, pp.1531-1544.
- Kaiser, F.G., Byrka, K., and Hartig, T. (2010) ‘Reviving Campbell’s Paradigm for Attitude Research.’, *Personality and Social Psychology review*, pp.1-17.

- Kagan, R.A., Thornton, D. and Gunningham, N. (2003) 'Explaining corporate environmental performance: how does regulation matter?', *Journal of Law and Society Association*, 37(1), pp.51-90.
- Kallgren, C.A., Reno, R.R. and Cialdini, R.B. (2000) 'A focus theory of normative conduct: when norms do and do not affect behaviour', *Society for Personality and Social Psychology*, 26(8), pp.1002-1012.
- Kanter, R.M. (1999) *From spare change to real change: the social sector as beta site for business innovation*. Harvard: Harvard Business Publishing.
- Kassarjian, H.H. (1977) 'Content analysis in consumer research', *Journal of Consumer Research*, 4, pp.8-18.
- Kelman, H.C. (1958) 'Compliance, identification, and internalization: three process of attitude change', *The Journal of Conflict Resolution*, 2(1), pp.51-60.
- Kerlinger, F. H. (1964) *Foundations of behavioral research: educational and psychological inquiry*. New York: Holt, Rinehart and Winston.
- Khetriwal, D.S., Kraeuchi, P., and Widmer, R. (2009) 'Producer responsibility for e-waste management: key issues for consideration - learning from Swiss experience', *Journal of Environmental Management*, 90, pp.153-165.
- King, D. (2008) *Energybiz.* Available at: http://energycentral.fileburst.com/EnergyBizOnline/2008-3-may-jun/ (Accessed on 23 July 2012).
- Kirk, D. (1998) 'Attitudes to environmental management held by a group of hotel managers in Edinburgh', *International Journal of Hospitality Management*, 17, pp.33-47.
- Kisby, B. (2010) 'The big society: power to the people?', *The Political Quarterly*, 81(4), October-December.
- Klein, N. (2014) *This changes everything: Capitalism vs. the climate*. New York: Simon and Schuster, Inc.
- Knight, A., and Ruddock, L. (2008) *Advanced research methods in the built environment*. UK: Wiley-Blackwell.
- Knowles, K., and Espinosa, A. (2009) 'Towards a holistic framework for environmental change: the role of normative behavior and informal networking to enhance sustainable business practices', *System Practice Action Resource*, 22, pp.275-291.
- Kolbe, R.H., and Burnett, M.S. (1991) 'Content-analysis research: an examination of applications with directives for improving research reliability and objectivity', *Journal of Consumer Research*, 18, pp.243-250.
- Kollmuss, A. and Agyeman, J. (2002) 'Mind the Gap: why do people act environmentally and what are the barriers to pro-environmental behaviour?', *Environmental Education Research*, 8(3), pp.239-260.
- Kong, N., Salzmann, O., Steger, U., and Somers, A.I. (2002) 'Moving business/industry towards sustainable consumption: the role of NGOs', *European Management Journal*. 20(2), pp.109-127.
- Krippendorff, K. (2004) 'Reliability in content analysis some common misperceptions and recommendations', *Human Communication Research*, 30(3), pp.411-433.

- Kumar, A., and Tan, A.W.K. (2006) 'A decision making model for reverse logistics in the computer industry', *The International Journal of Logistics Management*, 17(3), pp.331-354.
- Kumar, S., and Malegeant, P. (2006) 'Strategic alliance in a closed-loop supply chain, a case manufacturer and eco-non-profit organization', *Technovation*, 26, pp.1127-1135.
- Kumar, S., and Putnam, V. (2008) 'Cradle to cradle: reverse logistics strategies and opportunities across three industry sectors', *International Journal of Production Economic*. 115, pp.305- 315.
- Krupp, F.D. (1986) 'New environmentalism factors in economic needs', *Wall Street Journal*, November 20 1986.
- Kvale, S. (1996) *Interviews and introduction to qualitative research interviewing.* London: Sage.
- Kvale, S., and Brinkmann, S. (2008) *Interviews: learning the craft of qualitative research interviewing*. 2nd edition, Sage.
- Kyle, Jr. W.C. (1997) 'Action research', *Journal of Research in Science Teaching*. 34(7), pp.669-671.
- Lachman, R., Nedd, A. and Hinings, B. (1994) 'Analyzing cross-national management and organisations', *A Theoretical Framework. Management Science*, 40(1), pp.40-55.
- Lecy, J. and Beatty, K. (2012) *Structured Literature Reviews Using Constrained Snowball Sampling (online)*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1992601 (Accessed on: 02 August 2018).
- Lance, M. (2001) 'What do we mean by corporate social responsibility?', *Corporate Governance*, 1(2), pp.16-22.
- Lasswell, H. D., Lerner, D., and De Sola Pool, I. (1952) *The comparitive study of symbols*. Stanford, California: Stanford University Press.
- LeVasseur, J.J. (2003) 'The problem of bracketing in phenomenology', *Qualitative Health Research*, 13(3), pp.408-420.
- Locke, K. (2001) *Grounded theory in management research*. California: Sage.
- Loe, T.W., Ferrell, L., and Mansfield, P. (2000) 'A review of empirical studies assessing ethical decision making in business', *Journal of Business Ethics*. 25, pp.185-204.
- Lofland, J., and Lofland, L.H. (1995) *Analysing social setting: A guide to qualitative observation and analysis*. Belmont, CA: Wadsworth.
- LCRN, (2008) *Third sector re-use capacity in London*. London: LCRN.
- Letsrecycle, (2018) *League Tables (online)*. Available at: https://www.letsrecycle.com/councils/league-tables/ (Accessed on: 24 October 2018).
- Lopez, K.A., and Wills, D.G. (2004) 'Descriptive versus interpretive phenomenology: their contributions to nursing knowledge', *Qualitative Health Research*, 14(5), pp.726-735.
- Love Food hate waste (2018), *About us (online).* Available at: https://www.lovefoodhatewaste.com/about-us (Accessed on: 01 April 2018).
- Lovelock, J. (1979) *Gaia, a new look at life on Earth*. Oxford: Oxford University Press.
- Likert, R. (1932) 'The technique for the measurement of attitudes', *Archives of Psychology*, 22, pp.5-55.
- Lincoln, Y.S., and Guba, E.G. (1985) *Naturalistic inquiry*. Newbury Park, CA: Sage.

- Lindenberg, S., and Steg, L. (2007) 'Normative, gain and hedonic goal frames guiding environmental behaviour', *Journal of Social Issues*, 63(1), pp.117-137.
- Linkenbach, J., and Perkins, H.W. (July 17, 2003) *"Most of us wear seatbelts: the process and outcomes of a 3-year statewide adult seatbelt campaign in montana."* Conference presentation, Boston, MA: The National Conference on the Social Norms Model.
- Livingston, D.N., and Boal, F.W. (1989) *The behavioural environment: essays in reflection, application and re-evaluation*. London and New York: Routledge.
- Lynas, M. (2008) *Six degrees: our future on a hotter planet*. London: National Geographic Society.
- Lynch, K. (1990) *Wasting away*. San Francisco: Sierra Club Books.
- MacDonald, C. (2012) 'Understanding participatory action research: a qualitative research methodology option', *Canadian Journal of Action Research*, 13(2), pp.34-50.
- MakingItMagazine.net (2013), *The circular economy: interview with Walter Stahel (online).* Available at: http://www.makingitmagazine.net/?p=6793 (Accessed on: 26 June 2018).
- Manaktola, K., and Jauhari, V. (2007) 'Exploring consumer attitude and behavior towards green practices in the lodging industry in India', *International Journal of Contemporary Hospitality Management*, 19(50), pp.thirty-six4-377.
- Mang, P., and Reed, B. (2011) *Regenerative development and design*. Regenesis Group and Story of Place Institute, Chapter 303, Encyclopedia Sustainability Science and Technology, 2112.
- Mannetti, L., Pirro, A., and Livi, S. (2004) 'Recycling: planned and self-expressive behavior', *Journal of Environmental Psychology*, 24, pp.227-2thirty-six.
- Manuel, C. J., Sunseri, A.M., Olson, R., and Scolari, M. (2007) 'A diagnostic approach to increase reusable dinnerware selection in a cafeteria', *Journal of Applied Behaviour Analysis*, 40(2), pp.301-310.
- Marsh, D., and Stoker, G. (1995) *Theory and methods in political science*. London: Macmillan Press Limited.
- Marshall, C., and Rossman, G.B. (2011) *Designing qualitative research*. 5th edition, Thousands Oaks, CA: Sage.
- Mason, J. (2002) *Qualitative researching*. 2nd edition, Thousand Oaks, London: Sage.
- Mathews, M.R. (1997) 'Twenty-five years of social and environmental accounting research: is there a silver jubilee to celebrate', *Accounting, Auditing and Accountability Journal*, 10(4), pp.481-531.
- Maxwell, J.A. (2005) *Qualitative research design: an interactive approach*. 2nd Edition, Thousand Oaks, London: Sage.
- Mayring, P. (2000) 'Qualitative content analysis', *Forum: Qualitative Social Research*, 1(2), pp.1-7.
- Mazzanti, M., and Zoboli, R. (2008) 'Waste generation, waste disposal and policy effectiveness: evidence on decoupling from the European Union.', *Resources, Conservation and Recycling*, 52, pp.1221-1234.

- McNair, R. E. (2000) *An introduction to content analysis*. Chapter 11, Washington: depts.washington.edu.
- Meho, I. L. (2006) 'E-Mail Interviewing in Qualitative Research: A Methodological Discussion', *Journal of The American Society for Information Science and Technology*, 57(10), pp. 1284-1295.
- Meissner, H. I. (2010) *Best practices for mixed-methods research in the health sciences*. Bethesda: Office of Behavioural and Social Sciences Research.
- Meneses, G.D., and Palacio, A.B. (2005) 'Recycling behaviour: a multidimensional approach', *Environment and Behaviour*, 37(1), pp.837-860.
- Mertens, D.M., and Hesse-Biber,S. (2013) 'Mixed-methods and credibility of evidence in evaluation.', *New Directions for Evaluation*, 138 (1), pp.5-13.
- Miles, M., and Huberman, A. (1994) *Qualitative data analysis*. 1st edition, Thousands Oaks, Sage publications.
- Miller, G., and Dingwall, R. (1997) *Qualitative research: theory, method and practice*. London: Sage.
- Miller, R., and Brewer, J. (2004) *The a-z of social research*. London: Sage.
- Miller, M.B., Greenwood, D., and Maguire, P. (2003) 'Why action research?', *Sage publication*, 1 (1), pp.9-28.
- Mills, J., and Briks, M. (2014) *Qualitative methodology: a practical guide*. Los Angeles: Sage publications.
- Mischler, E. (1986) *Research interviewing: context and narrative*. USA, Harvard: University Press.
- Mohr, L.A, Webb, D.J., and Harris, K.E. (2001) 'Do consumer expect organisations to be socially responsible? The impact of corporate social responsibility on buying behavior', *The Journal of Consumer Affairs*, 35(1), pp.45-72.
- Monbiot, G. (2000) *Captive state: The corporate takeover of Britain*. London: Macmillan.
- Monbiot, G. (2007) *The New Friends of the Earth? The superstores are suddenly competing to be green. Can we trust them?* Available at: http://www.monbiot.com/2007/01/23/the-new-friends-of-the-earth/ (Accessed: 25 December 2015).
- Monbiot. G. (2015) *A State Licence to Rob the Public*. Available at: http://www.monbiot.com/2015/01/23/a-state-licence-to-rob-the-public/ (Accessed: 08 August 2016).
- Morrisseya, A.J., and Browneb, J. (2004) 'Waste management models and their application to sustainable waste management', *Waste Management*, 24, pp.297-308.
- Murray, R. (1999) *Creating wealth from waste*. London: Demos.
- NASA, (2018). *Climate change: How do we know?* Available at: https://climate.nasa.gov/evidence/ (Accessed: 15 August 2018).
- NSCA, (2002) *Comparison of Emission from Waste management option*. Brighton: National Society for Clean Air and Environmental Protection.
- Nef, (2008) *A green new deal*. London: New economics Foundation, (ISBN 978 1 904882 35 0).
- Neuendorf, K.A. (2002) *The content analysis guidebook*. Thousand Oaks, CA: Sage.

- Nocito, T. (2012). *Zero Waste - Zero Waste - Zero Waste*. Available at: http://abcov.wordpress.com/2012/07/24/zero-waste-zero-waste-zero-waste/?goback=%2Egmr_1960441%2Egde_1960441_member_138132826 (Accessed: 25 July 2012).
- Nolan, J.M., Schultz, P.W., Cialdini, R.B., Goldstein, N.J., and Griskevicius, V. (2008) 'Normative social influence is under detected', *Society for personality and Social Psychology*, 34, pp.913-923.
- Novick, G. (2008), 'Is There a Bias Against Telephone Interviews In Qualitative Research?', *Res Nurs Health*, 31(4), pp. 391-398.
- Nye, M. and Hargreaves, T. (2010) 'Exploring the social dynamics of pro-environmental behaviour changes: a comparative study of intervention processes at home and work', *Journal of Industrial Ecology*, 14(1), pp.137-149.
- Oakdene Hollins, (2011) *Re-use and material use efficiency*. Buckinghamshire: Oakdene Hollins.
- OECD, (2015) *Secretry-General's Report to Ministers*. OECD.
- ONS, (2013) *Updated estimates of UK resource use using raw material equivalents*. UK: ONS.
- ONS, (2014) *A quick guide to the retail sales index*. Version 2.1, UK: ONS.
- ONS, (2015a) *UK Business: Activity, size and location*. Available at: https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/ukbusinessactivitysizeandlocation/2015-10-06 (Accessed: 14 June 2016).
- ONS, (2015b) *UK environmental goods and services sector (EGSS): 2010-2012*. UK: ONS.
- OPSI, (2009) *UK Crown Bodies.* Available at: http://www.nationalarchives.gov.uk/information-management/our-services/uk-crown-bodies.htm (Accessed: 14 February 2013).
- O'Leary, Z. (2004) *The essential guide to doing research*. London: Sage Publication.
- Onwuegbuzie, A.J., and Johnson, R.B. (2006) 'The validity issue in mixed research', *Research in the Schools*, 13(1), pp.48-63.
- Oregon Department of Environmental Quality, (2013) *Waste Prevention and Re-use*. Available at: http://www.deq.state.or.us/lq/sw/wasteprevention/index.htm (Accessed: 11 February 2013).
- Organ, D.W. (1997) 'Organizational citizenship behavior: it's construct clean-up time', *Human Performance*, 10(2), pp.85-97.
- Organ, D.W., Podsakoff, P.M., and MacKenzie, S.B. (2006) *Organisational citizenship behaviour: Its nature, antecedents and consequences*. USA: Sage.
- Oskamp, S., Harrington, M.J., Edwards T.C., and Sherwood, D.L. (1991) 'Factors influencing household recycling behaviour', *Environment and Behaviour*, 23, pp.494-519.
- Osmani, M., Glass, J., and Price, A.D.F. (2008) 'Architects' perspectives on construction waste reduction by design', *Waste management*, 28, pp.1147-1158.
- Paisley, W. J. (1969) *Studying style as deviation from encoding norms, in the analysis of communications content: developments in scientific theories and computer techniques, eds. G. Gerbner, et al., pp.133-46.* New York: Wiley.
- Panayotou, T. (1997) 'Demystifying the environmental Kuznets curve: turning a black box into a policy tool', *Environment and Development Economics*, 2(4), pp.465-484.

- Park, Y.J. (2014) 'Assessing determinants of industrial waste re-use: the case of coal ash in the United States.', *Resources, Conservation and Recycling*, 92, pp.116-127.
- Parker, E.B. (1970) 'Content analysis for the social science and humanities', *American Sociological Review*, 35(2), pp.356-357.
- Parliamentary business, (2010) *Recession and recovery: key issues for the 2010 Parliament*. Available at: http://www.parliament.uk/business/publications/research/key-issues-for-the-new-parliament/economic-recovery/recovery-from-recession/ (Accessed: 26 July 2016).
- Pattie, C., and Johnston, R. (2011) 'How big is the Big Society?', *Parliamentary Affairs*, 64(3), pp.403-424.
- Pawson, R., and Tilley, N. (1997) *Realistic Evaluation*. London: Sage Publications.
- Payne, D.M, and Raiborn, C.A. (2001) 'Sustainable development: the ethics support the economics', *Journal of Business Ethics*, 32, pp.157-168.
- Pearce, D., and Barbier, E.D. (2000) *Blueprint for a sustainable economy*. London: Earthscan.
- Pelenc, J., Ballet, J., and Dedeurwaerdere, T. (2015) *Weak sustainability versus strong sustainability*. United Nations: Global Sustainable Development Report.
- Peng, C.J., and Chiu, S.F. (2010) 'An integrative model linking feedback environment and organisational citizenship behaviour', *The Journal of Social Psychology*, 150(6), pp.582-607.
- Perkins, H.W. (2003) *Chapter 1 in The emergence and evolution of the social norms approach to substance abuse prevention*. Thesis (PhD). Geneva, Hobart and William Smith Colleges.
- Petts, J. (1994) 'Effective waste management: understanding and dealing with public concerns', *Waste Management* and *Research*, 12 (3), pp.207-222.
- Phillips, P.S., Pratt, R.M., and Pike, K. (2000) 'An analysis of UK waste minimization clubs: key requirements of future cost effective developments', *Waste management*, 21, pp.389-404.
- Pickett-Baker, J.P., and Ozaki, R. (2008) 'Pro-environmental products: marketing influence on consumer purchase decision', *Journal of consumer marketing*, 25(5), pp.281-293.
- Piercy, K.W. (1998) 'Analysis of semi-structured interview data', *Utah State University*, pp.1-16.
- Podsakoff, P. M., Ahearne, M., and MacKenzie, S. B. (1997) 'Organizational citizenship behavior and the quality and quality of work group performance', *Journal of Applied Psychology*, 82, pp.262-270.
- Pollock, T.G. (1998) *Risk, reputation, and interdependence in the market for initial public offerings: Embedded networks and the construction of organization value*. Unpublished doctoral dissertation: University of Illinois.
- Pongracz E, Phillips PS and Keiski RL. (2004) *From waste minimization to resources use optimization: Definitions and legislative background, In: Pongracz E (ed.) Proceedings of the Waste Minimization and Resources Use Optimization Conference, June 10th 2004, pp. 11- 20*. University of Oulu, Finland. Oulu University Press: Oulu.
- Poonprasit M., Phillips P S., Smith A., Wirojanagud W., and Naseby D. (2005) 'The application of waste minimisation to business management to improve environmental performance in the food and drink industry', *Resources, Conservation and Recycling*, 64(4), pp.327-338.

- Porac, J.F., Thomas, H., Wilson, F., Paton, D., and Kanfer, A. (1995), Rivalry and the industry model of scottish knitwear producers', *Administrative Science Quarterly*, 40(2), pp.203-229.
- Porac, J., Mishina, Y., and Pollock, T.G. (2000) *Entrepreneurial narratives and the dominant logics of high growth firms mapping strategy*. Thousand Oaks, CA: Sage.
- Porter, L.W., and Lawler, E.E. (1968) *Managerial attitude and performance*. Homewood, IL: Dorsey Press.
- Pratt R.M., and Phillips P.S. (2000) 'The role and success of UK waste minimisation clubs in the correction of market and information failures.' *Resources, Conservation and Recycling*, 30(3), pp.201-219.
- Preece, R. (1998) *Starting research: an introduction to academic research and dissertation writing*. New York: Macmillan.
- Prendergrast, J., Foley, B., Menne, V., and Isaac, A.K. (2008) *Creatures of habit? The art of behaviour change*. London: The Social Market Foundation.
- Prentice, D.A., and Miller, D.T. (1996) 'Pluralistic ignorance and the perpetuation of social norms by unwitting actors', *Advances in Experimental Social Psychology*, 28, pp.161-209.
- Preston, F. (2012) *A global redesign? Shaping the circular economy*. Chatham House: EERG.
- Pre-waste (2013), *What is waste prevention (online)?* Available at: http://www.prewaste.eu/prevention-policies/item/55-what-is-waste-prevention?.html (Accessed: 11 February 2013).
- Pryor, J. (2010) 'Constructing research questions: focus, methodology and theorisation. In P.Thomson, and M. Walker (Eds.)', *The Routledge Doctoral Student's Companion: Getting to grips with research in the Education and the Scoial Sciences*, p. 171.
- Purohit, R. (2014) *Towards a participatory approach in managing change in multi-stakeholder buildings of historical importance in London, UK*. Thesis (PhD), England: Kingston University.
- Purohit, R., Tavri, P., and Sayce, S. (2015) 'Content analysis as a successful Built environment research methodology.' *Presentation of the IBEE conference, 3rd to 4th September 2015*, Bath: IBEE, UK.
- Qu, S.Q., and Dumay, J. (2011) 'The qualitative research interview', *Qualitative Research in Accounting and Management*, 8(3), pp.238-264.
- Ragin, C. C. (1994) *Constructing social research: the unity and diversity of method*. Thousand Oaks, CA: Pine Forge Press.
- Read, D.A. (2001) *National strategy, local practice and the solid waste management gap? A local authority management perspective on sustainable solid waste management in the UK*. Thesis (PhD). England: Kingston University.
- Recycle Now (2018), *About us (online).* Available at: https://www.recyclenow.com/about-us (Accessed: 01 April 2018).
- Reed, A. (2004) *Activating the self-importance of consumer selves: exploring identity salience effects on judgements*. Thesis (PhD). The Wharton School of Business.
- Reis, E. (2005) 'Combining behavioural theories to predict recycling involvement.', *Environment and Behaviour*, 37(3), pp.thirty-six4-396.

- Resource Futures, (2009) *Understanding waste growth at local authority level*. Bristol: Resources Futures.
- Rimal, R.V., and Real, K. (2003) 'Understanding the influence of perceived norms on behaviour', *Communication Theory*, 13(2), pp.184-203.
- Rimal, R.V., and Real, K. (2005) 'How behaviors are influenced by perceived norms: a test of the theory of normative social behaviour', *Communication Research*, 32, pp.389-414.
- Robinson, G.M., and Read, A.D. (2005) 'Recycling behaviour in a London Borough: results from large-scale household surveys', *Resources, Conservation and Recycling*, 45(1), pp.70-83.
- Robson, C. (1993) *Real world research: a resource for social scientists and practitioner-researcher*s. 2nd edition. Massachusetts: Blackwell.
- Robson, C. (2000) *Small-scale evaluation*. London: Sage.
- Robson, C. (2013) *Real world research: a resource for users of social research methods in applied settings*. 3rd edition. UK: Wiley.
- Robson, C., and McCartan, K. (2016) *Real world research: a resource for users of social research methods in applied settings*. 4th edition. UK: Wiley.
- Rossman, G.B., and Wilson,B.L. (1985) 'Numbers and words: combining quantitative and qualitative methods in a single large scale evaluation study', *Evaluation Review*, 9(5), pp.627-643.
- Rothman, A.J. (2000) 'Towards a theory-based analysis of behavioural maintenance', *Health Psychology*, 19(1), pp.64-69.
- Sadala, M.L.A., and Adorno, R.C.F. (2001) 'Phenomenology as a method to investigate the experience lived: a perspective from Husserl and Merleau Ponty's thought', *Journal of Advanced Nursing*, 37(3), pp.282-293.
- Salancik, G.R., and Meindl, J.R. (1984) 'Corporate attributions as strategic illusions of management control', *Administrative Science Quarterly*, 29, pp.238-254.
- Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J. and Griskevicius. V. (2007) 'The constructive, destructive, and reconstructive powers of social norms', *Association for Psychological Science*, 18, pp.429-434.
- Sgostrom, M., and Ostblom, G. (2010) 'Decoupling waste generation from economic growth- A CGE analysis of the Swedish case', *Ecological economics*, 69, pp.1545-1552.
- Sharp, L., and Luckin, D. (2006) 'The community waste sector and waste services in the UK: current state and future prospects', *Resources, Conservation and Recycling*, 47, pp.277-294.
- Silverman, D. (2000) *Doing qualitative research: A practical handbook*. London: Sage.
- Sitarz, D. (1994) *Agenda 21: The earth summit strategy to save our planet*. Worldwatch environmental alert series, Boulder: EarthPress.
- Smith, A. (2006) *The theory of moral sentiments*. USA: Dover publications.
- Springer, T. and Haver, R. (1994) 'Preventing waste at the source: educating the public' *Resource Recycling*, 13, pp.95-95.
- Steg, L., and Vlek, C. (2009) 'Encouraging pro-environmental behaviour: an integrative review and research agenda', *Journal of Environmental Psychology*, 29, pp.309-317.

- Stern, P.C. (2000) 'Toward a coherent theory of environmentally significant behaviour', *Journal of Social Issues*, 56(3), pp.407-424.
- Study.com, (2015). *Pluralistic Ignorance: Definition & Examples.* Available at: study.com/academy/lesson/pluralistic-ignorance-definition-examples-quiz.html (Accessed: 02 March 2020).
- Strasser, S. (1999) *Waste and want: a social history of trash*. Henry Holt and Company, New York: Macmillan.
- Tavri, P., Sayce, S., and Hands, V. (2013) 'Waste re-use and Preparing for re-use: The top priority.' *Proc. Of the 2nd International Conference and Exhibition WASTES: Solutions, Treatments and Opportunities*, 11th to 13th September 2013, Braga, Portugal: CVR, pp. 465-470.
- Tavri, P., Sayce, S., and Hands, V. (2014a), 'Developing a theoretical behavioural framework and identifying its association with the UK industry evidence on waste re-use.' *Proc. Of the 7th International Conference on Waste Management and the Environment*, 12th to 14th May 2014, Ancona, Italy: Wessex Institute of Technology, UK.
- Tavri, P., Sayce, S., and Hands, V. (2014b) 'Influencing organisation behaviour towards waste re-use.' *Presentation of the RGS-IBG Annual International Conference, 26th to 29th August 2014*, London: RGS-IBG, UK.
- Tavri, P., Sayce, S., and Hands, V. (2015a) 'Organisational behaviour change towards waste re-use in the UK third sector', *International Journal of Computational Methods and Experimental Measurements*, 3(4), pp.291-304.
- Tavri, P., Sayce, S., and Hands, V. (2015b) 'Determining waste re-use behaviour among UK organisations: A content analysis study.' *Presentation of the RGS-IBG Annual International Conference, 2nd September 2015*, Exeter: RGS-IBG, UK.
- Tavri, P. (2017) 'Perceptions of re-use.' *Chartered Institute of Wastes Management Journal*, August issue, pp.48-49.
- Tavri, P. (2018a) 'It's In The Bag'. *Chartered Institution of Wastes Management Journal*, February 2018, pp.34-35.
- Tavri, P. (2018b) 'Waste Management Techniques and Environmental Solutions - A Significant Association.' *Proceedings of the Institution of Civil Engineers - Waste and Resource Management*, 17, pp.42-50, https://doi.org/10.1680/jwarm.17.00042.
- Tavri, P. (2018c) 'Define & Conqure'. *Chartered Institution of Wastes Management Journal*, October 2018, pp.24-26.
- Tavri, P. (2019a) 'A successvie pro-environmental framework.' *Proceedings of the Institution of Civil Engineers - Waste and Resource Management*, 172 (1), pp.14-27.
- Tavri, p. (2019b) 'Changing Times.' *Chartered Institution of Wastes Management Journal*, March/April 2019, pp.39-42.
- Taylor, P. (2018) 'Is the time right for a "re-use revolution"?' *Chartered Institution of Wastes Management Journal*, April 2018, p.53.
- Taylor, S. E., & Fiske, S. T. (1978). Salience, attention, and attribution: Top of the head phenomena. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, 11, pp. 249-288. New York: Academic Press.

- Teddlie, C., and Tashakkori, A. Chapter 1, (2010) *Handbook of mixed-method in social and behavioural research*. 2nd edition. Thousand Oaks, California: Sage.
- Thaler, R.H, and Sunstein, C.R. (2009) *Nudge Improving decisions about health, wealth and happiness*. London: Penguin Books.
- Thogersen, J. (1997) 'Values and attitudes formation towards emerging attitude objects: from recycling to general, waste minimization behaviour', *Advances in Consumer Research,* 24, pp.182-189.
- Thogersen, J. (2006) 'Norms for environmentally responsible behaviour: an extended taxonomy.', *Journal of Environmental Psychology*, 26, pp.247-261.
- Thogersen, J. (2007) 'Activation of social norms in social dilemmas: a review of the evidence and reflections on the implications for environmental behaviour', *Journal of Economic Psychology,* 28, pp.93-112.
- Thomas, D.R. (2003) *A general inductive approach for qualitative data analysis*. New Zealand: School of Population Health, University of Aukland.
- Thomas, T., Schermerhorn, Jr. J.R. and Dienhart, J.W. (2004) 'Strategic leadership of ethical behaviour in business', *Academy of Management Executive,* 18(2), pp.56-66.
- Tonglet M., Phillips P., and Read A. (2004) 'Using the theory of planned behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK', *Resources, Conservation and Recycling*, 41(3), pp.191-214.
- Townsend K. (2013) *Saturation And Run Off: How Many Interviews Are Required In Qualitative Research?* Available at: https://www.anzam.org/wp-content/uploads/pdf-manager/5_ANZAM-2013-002.PDF (Accessed: 02 March 2020).
- Trochim, W.M.K. (2006) *Research methods knowledge base.* Available at: http://www.socialresearchmethods.net/kb/sampnon.php (Accessed: 21 May 2015).
- Trotter, R.T. II (2012) 'Qualitative research sample design and sample size: Resolving and unresolved issues and inferential imperatives', *Private Medicine*, 55, pp.398-400.
- Tucker P. (2001) *Understanding Recycling Behaviour*. Scotland: Newspaper Industry Environmental Technology Initiative, (ISBN 1-903978-01-7).
- Tucker, P., and Douglas, P. (2006) *Understanding household waste prevention behaviour*. Scotland: University of Paisley Environmental Initiatives Research Group, (WRT109).
- Tucker P., and Smith, D. (1999) 'Simulating household waste management behaviour', *Artificial Societies and Social Simulation*, 2(3).
- Tudor, T., Robinson, G.M., Riley, M., Guildbert, S., and Barr, S.W. (2011) 'Challenges facing the sustainable consumption and waste management agendas: perspectives on UK households', *Local Environment,* 16(1), pp.51-66.
- Tukker, A. (2015) 'Product services for a resource-efficient and circular economy-a review', *Journal of Cleaner Production*, pp.76-91.
- UNCSD, Agenda 21, (1992) *United Nations Conference on Environment and Development*. 3 to 14 June Rio de Janerio, Brazil: UNCSD.
- UNCSD, (2012) *Blue Economy Concept Paper*. Rio+20, UNCSD.

- UNEP, (2010) *Waste and climate change: Global trends and strategy framework*. Osaka/Shiga: UNEP, (DTI/1314/JP).
- UNEP, (2011) *Decoupling natural resource use and environmental impacts from economic growth*. Nirobi/Kenya: UNEP, (DTI/1388/PA).
- Urry, (2010) 'Consuming the planet to excess', *Theory, Culture and Society*, 27(2-3), pp.191-212.
- Urry, J. (2011) *Climate Change and Society*. Cambridge: Polity Press.
- Valle, P.O.D., Rebelo, E., Reis, E., and Menezes, J. (2005) 'Combining behavioural theories to predict recycling involvement', *Environment and Behaviour*, 37, pp.thirty-six4-396.
- Ventresca, M.J., and Mohr, J.W. (2001) *Archival Research Methods*. Blackwell Publishers.
- Vermeir, I., and Verbeke, W. (2006) 'Sustainable food consumption: exploring the consumer "attitude-behavioral intention" gap', *Journal of Agricultural and Environmental ethics*, 19, pp.169-194.
- Vining, J., and Ebreo, A. (2002) *Emerging theoretical and methodological perspectives on conservation behaviour*, *Chapter 35 in the new handbook of environmental psychology*. ResearchGate.
- Vlek, C. (2000) 'Essential psychology for environmental policy making', *International Journal of Psychology*, 35(2), pp.153-167.
- Walter, R.S. (1998) *From products to services: selling performance instead of goods*. Institut de la Durée: greeneconomics.net, (IPTS report).
- Waste data and information, UK, (2014) *Environment Agency*. Available at: http://www.environment-agency.gov.uk/research/library/data/34169.aspx (Accessed: 15 October 2014).
- Waste Online, (2004) *A History of Waste Management.* Available at: http://dl.dropbox.com/u/21130258/resources/Wasteguide/mn_overview_history.html (Accessed: 12 February 2013).
- Waysman, M., and Savaya, R. (1997) 'Mixed-method evaluation: a case study.', *Evaluation Practice*, 18(3), pp.227-237.
- Wearden., G. (2009) *Timeline: UK recession*. Available at: https://www.theguardian.com/business/2009/oct/23/uk-recession-timeline (Accessed: 26 July 2016).
- Weber, R.P. (1990) *Chapter 14 in Basic content analysis*. 2nd edition. Thousand Oaks, California: Sage.
- Wenzel, M. (2005) 'Misperceptions of social norms about tax compliance: from theory of intervention', *Journal of Economic Psychology*, 26, pp.862-883.
- Wieser, H., and Troeger, N. (2017) 'Exploring the Inner Loops of the Circular Economy: Replacement, Repair, and Re-use of Mobile Phones in Austria', *Journal of Cleaner Production*, 172, pp.3042-3055.
- Wijkman, A., and Rockstrom, J. (2011) *Bankrupting nature: Denying our planetary boundaries*. London: Earth Scan from Routledge.

- Williams, N, Croker, M., and Barrett, D. (2005) *Review of the voluntary and community waste sector in England, Final report*. Available at: http://archive.DEFRA.gov.uk/environment/waste/thirdsector/documents/communityreview.pdf (Accessed: 14 February 2013).
- Williams, P.T. (2005) *Waste Treatment and Disposal*. 2nd Edition. West Sussex, UK: John Wiley and Sons.
- Wills. J. (2012) 'The geography of community and political organisation in London', *Political Geography*, 31, pp.114-126.
- Wilson D.C. (1996) 'Stick or carrot?: the use of policy measures to move waste management up the hierarchy.', *Waste Management and Research*, 14(4), pp.385-398.
- Wilson, D. C., Parker, D., Cox, J., Strange, K., Willis, P., Blakey, N. and Raw, L. (2012) 'Business waste prevention: a review of the evidence', *Waste Management and Research*, 30(9), pp.17-28.
- Wisker, G. (2008) *The postgraduate research handbook*. 1st edition, New York: Palgrave Macmillan.
- Woodman, R.W., Sawyer, J.E., and Griffin, R.W. (1993) 'Towards a theory of organisational creativity', *Academy of Management Review*, 18(2), pp.293-321.
- Woolridge, A., Morrissey, A., and Phillips, P.S. (2005) 'The development of strategic and tactical tools, using systems analysis, for waste management in large complex organisations: a case study in UK healthcare waste', *Resources, Conservation and Recycling*, 44, pp.115-137.
- World Bank, (2018) *World Development Indicators database Washington, DC (online).* Available at: http://data.worldbank.org (Accessed: 04 November 2018).
- World Class Communications Technologies, (2011) *3R's of sustainability: Reduce, Re-use, Recycle*. LLC.
- World Commission on Environment and Development, (1987) *Our common future*. Oxford: Oxford University Press.
- WRAP, (2009) *Meeting the UK climate change challenge: The contribution of resource efficiency*. Oxon: WRAP.
- WRAP, (2010) *Designing out Waste Tool for Buildings (DoWT - B) (online)*. Available at: http://www.wrap.org.uk/sites/files/wrap/DoWT-B%20User%20Guide.pdf (Accessed: 20 November 2018).
- WRAP, (2013) *Innovative business models (online).* Available at: http://www.wrap.org.uk/content/innovative-business-models-1 (Accessed: 11 February 2013).
- WRAP, (2015) *Wrap Annual review 2015-2016*. Oxon: WRAP.
- WRAP, (2018a) *Our history (online)*. Available at: http://www.wrap.org.uk/about-us/our-history (Accessed: 31 March 2018).
- WRAP, (2018b) *BSI PAS 100: producing quality compost (online).* Available at: http://www.wrap.org.uk/content/bsi-pas-100-producing-quality-compost (Accessed: 01 April 2018).
- WRAP, (2018c) *Courtauld Commitment 1 (online)*. Available at: http://www.wrap.org.uk/content/courtauld-commitment-1 (Accessed: 01 April 2018).

- WRAP, (2018d) *On-Pack Recycling Label (online).* Available at: http://www.wrap.org.uk/content/pack-recycling-label (Accessed: 01 April 2018).
- WRAP, (2018e) *Courtauld Commitment 2 (online).* Available at: http://www.wrap.org.uk/content/courtauld-commitment-2-1 (Accessed: 01 April 2018).
- WRAP, (2018f) *BSI PAS 110 - Producing quality anaerobic digestate (online).* Available at: http://www.wrap.org.uk/content/bsi-pas-110-producing-quality-anaerobic-digestate (Accessed: 01 April 2018).
- WRAP (2018g) *The Hospitality and Food Service Agreement (online).* Available at: http://www.wrap.org.uk/content/hospitality-and-food-service-agreement-3 (Accessed: 01 April 2018).
- WRAP (2018h), *Developing Resource Efficient Business Models (REBus) (online).* Available at: http://www.wrap.org.uk/REBus (Accessed: 01 April 2018).
- WRAP (2018i), *What is Courtauld 2025 (online)?* Available at: http://www.wrap.org.uk/content/what-courtauld-2025 (Accessed: 01 April 2018).
- WRAP (2018j), *The UK Pastics Pact (online)*. Available at: http://www.wrap.org.uk/content/the-uk-plastics-pact (Accessed: 24/06/2018).
- WRAP (2018k), *Surplus food redistribution in the UK; 2015 to 2017.* Oxon: WRAP.
- Yahya, K., and Boussabaine, A.H. (2006) 'Eco-costing of construction waste.', *Management of Environmental Quality: An International Journal*, 17 (1), pp.6-19.
- Yin, R.K. (1994) *Case study research: design and method*. 2nd edition, Thousand Oaks, London and New Delhi: Sage publications.
- Yin, R.K. (2003) *Case study research*. London: Sage.
- Yin, R.K. (2008) *Case study research*. 4th edition. London: Sage.
- Zero waste Scotland, (2015) *Circular economy evidence building programme: Remanufacturing study*. Oakdene Hollins.
- Zhang, D. (2011) *Organisational citizenship behaviour*. PSYCH761: White paper.
- Zhang, L., and Sternberg. J.R. (2009) *Perspective on the nature of intellectual styles*. Springer publishing company, New York: Springer.
- Zhang, N., Williams, I. D., Kemp, S., and Smith, N. F. (2011) 'Greening academia: developing sustainable waste management at higher education institutions', *Waste Management*, 31(7), pp.1606-1616.